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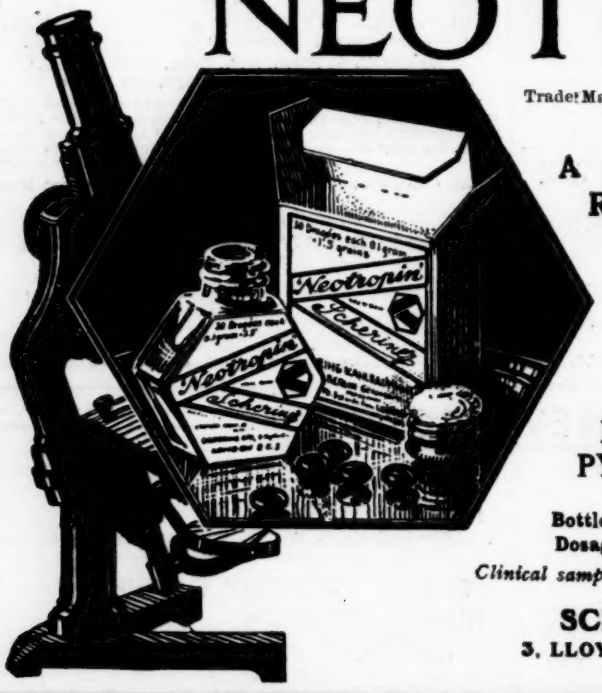

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"It may here be remarked that the term 'vertigo' is often used somewhat loosely. I do not take the expression 'giddiness' from a patient's mouth always to mean true giddiness. We have to put down not his name for, but the description he gives of, the sensation he calls giddiness." (Hughlings Jackson.[1])

As the type which will best serve as a foundation for the practical study of vertigo I propose to take the sensations of disturbed balance described by patients suffering from labyrinthine disease. I have therefore reviewed the notes of 100 patients with deafness, tinnitus, and giddiness, in whom the exclusion of any more central lesion justified the assumption of a labyrinthine cause and whose sensations I have recorded in their own words. These provide the description of 160 attacks or phases of giddiness for study. The majority of these fall readily into one or other of the following groups.

Types of Vertigo

I.—EXTERNAL OBJECTS APPEAR TO MOVE

The largest group (56) is that in which there was a false sense of movement of external objects, the sufferer himself remaining, and appearing to himself to remain, stationary. The external objects may seem to move in any plane, and the movement may be linear or rotary. The sensation is as a rule described as being abrupt in its onset and is relatively brief in its duration, which is usually counted in minutes rather than in hours. The most severe attacks are sometimes the briefest.

The description most easily elicited is that of things spinning or moving in a horizontal plane from left to right or vice versa, not I think necessarily because this is the most frequent experience but because it is the most easily described. Next after this in frequency is the sense of objects rotating, clockwise or counter-clockwise. A sense of vertical movement of the surroundings is apt to cause some degree of mental confusion, and likely to be attended by a fall, which then becomes the centre of attention. For these reasons a clear description of movement of external objects in this direction is not often forthcoming. The sense, however, of the floor or pavement rushing up to meet the patient may occur without falling. A sense of movement in the reverse direction is invariably accompanied by falling if the patient happens to be on his feet. If he is sitting or lying he is in a better position to describe such sensations which may be rotary as, for instance, the electric light globe in the ceiling rushing downwards towards the floor, or linear, as in the description of a patient who, while sitting, observed the walls to be falling and the floor giving way, the whole episode lasting but a minute and seeming to him like an earthquake.

Sensations of forward or backward movement in the horizontal plane would seem to be rare. I have only two accounts of a sensation which might come within this category: that of objects "suddenly moving away," given by one patient; and from another, the sense whenever she opened her eyes of things going forward. Movement in an oblique plane was clearly described by two patients, one of whom said that everything began to revolve from left to right with a downward inclination; the other, "everything shoots from left to right and up."

Sensations are frequently described which are less definite and yet sufficiently clear for inclusion within this group. Thus objects may be described as whirling, spinning, or moving from side to side without any definite account of plane or direction. A sense that everything is moving up and down is commonly described, or that surrounding objects suddenly seem to move or rock.

One patient, a woman of 55 with left-sided deafness and tinnitus of several years' duration, thus described two attacks.

> The first occurred while she was playing bridge. Suddenly the room "wouldn't stay still." The sensation lasted ten minutes, after which she found herself wobbly on her legs. The second attack occurred after breakfast. She felt sick and the room seemed to move, the floor going up and down. She held on to a support and later went back to bed suffering from epigastric discomfort. She found herself unsteady on her legs for the next day or two.

I have described this woman's symptoms in detail because I am coming to the point at which detail is important for the sake of clear definition. In the analysis of the descriptions given by patients a line must be drawn between what we are prepared certainly to call vertigo, and that which is probably of the same nature, but, owing to the slightness or brevity of the sensation, or a lack of introspective or descriptive power in the patient, is less certainly to be included. It is at this point that we take into account symptoms which we know to be commonly *associated* with true vertigo. The patient whose sensations I have described had tinnitus and deafness—symptoms which are in themselves indirectly of value. For the moment, however, I want to exclude these symptoms from consideration as being remotely, rather than immediately, associated with the sensation of the attack. The immediately associated symptoms of value in the story are the account of nausea in the second attack, and *after* each attack unsteadiness on the legs which persisted for some hours. The latter symptom in particular is of significance in determining the inclusion of minor sensations within the true limits of vertigo.

I would include therefore under the head of true vertigo not only those false sensations of movement in external objects, whose characters are clearly described, but any such sensation of movement—even if vaguely described—provided that the onset of the sensation is abrupt, that its duration is brief, and that it is followed by a sense of unsteadiness on the legs.

II.—THE PATIENT FEELS THAT HE MOVES

The second group comprises those attacks, 27 in number, in which there was a false sense of movement of self, without actual movement, and without any sense of movement in surrounding objects. These sensations are more variously described than those of Group I. Sensations of spinning or of falling in any direction are common, and the sensation of going downward, as if sinking through the floor, going down in a lift, or falling through space is described. One patient described this as a sensation

* The annual address for 1933, delivered at the Central London Throat, Nose and Ear Hospital on Oct. 6th.

of "falling right out of everything." If in bed the patient will describe a sense of rolling to one side or the other, or if he is sitting the chair may appear to topple.

The sensation is often one of passive movement, as if the sufferer is whirled round and round by an invisible force or pushed in various directions. Sometimes the sensation is referred to the head only, which may seem to go round and round or to fall or be pushed one way or the other. One patient spoke of his head "rushing forward," so that he thought it was going down between his legs.

Experiences of a less definite character are a sense of swaying, rocking, or falling without any particular direction. Here again abrupt onset, brief duration, and aftermath of unsteadiness warrant the inclusion of slight attacks within the limits of vertigo.

III.—COMBINATION OF THE ABOVE

Occasionally sensations of the types described in Groups I. and II. may occur together without any *actual* staggering or falling. This, however, is unusual. The combination of a sense of movement of external objects and of self as a rule indicates a severe disturbance, and if the patient is upright he will stagger or fall.

IV.—THE PATIENT REALLY MOVES

The fourth group includes attacks in which there is actual movement of self—the patient staggers or falls. This experience was described in 25 instances, and in nine of these there was a simultaneous sense of movement in the surroundings. This combination may be regarded as the most distinctive of all forms of vertigo, but the movement of self, with falling or fear of falling, may occupy the sufferer's attention to a point at which the sensation of movement in the surroundings is relegated to the background. The memory of its occurrence therefore may be elicited only by direct question. The fall—without sense of movement in the surroundings—which occurs as the result of labyrinthine disorder, is sometimes distinguished with difficulty from falling from other causes; for instance, attacks of syncope, petit mal, or cataplexy. The most important point of evidence in favour of vertigo is the existence *after* the attack of a subjective or objective disturbance of equilibrium.

Thus one patient had had one or two attacks which she referred to as giddy turns, in which "quite suddenly I feel I'm going, my knees give way and I fall." Associated with this there was no loss of consciousness, nor any abnormal feeling in the head, but after she had been helped up the patient noticed that her balance was not quite right, and this feeling would persist for two or three hours. The aftermath justifies the inclusion of such an attack within the limits of vertigo.

In some instances the falling is associated with sensations of impulsion from without of a kind that have already been described and which are themselves of definite value, for example, a sensation as of being hit on the back of the head in association with falling forwards; a sudden fall to the left as if hit under the jaw. In other circumstances the sensation is less decided—the patient may describe himself as falling as if shot.

Staggering or lurching of sudden onset allows of clearer description by the patient. The sensations are those already mentioned in Group II., but are associated with actual movement short of falling.

OTHER VERTIGINOUS SENSATIONS

The phenomena so far described may be grouped together as falling within the definition of vertigo proposed by Gowers, who used it as a "designation for any movement or sense of movement, either in the individual himself or in external objects that involves a defect, real or seeming, in the equilibrium of the body." [9]

There are other symptoms encountered in patients with labyrinthine disease which cannot be accepted under the head of vertigo as thus defined, but are so nearly related to it both in their quality and in frequency of association that they call for description and classification.

I have already referred to the sense of unsteadiness on the legs which so frequently occurs after an attack of vertigo that its presence after an attack of doubtful nature may be decisive. The patient in this condition complains of a general sense of uncertainty in his equilibrium, of which he can give no other description than that conveyed by the word giddiness. Distinctive features, however, are often apparent in the relation of this sensation to movement and posture. It is commonly absent at rest and present on walking when it is associated with fear of falling and often with general loss of confidence. It is frequently related to particular movements, and especially movements involving the head. The complaint will then be of giddiness "on turning round quickly," "if I lift my head or move it to one side quickly," "on looking down or turning my head quickly to the left," and so on. Of the 100 patients in this series 37 complained, in terms which showed little variation, of symptoms of this kind. We have here a symptom so distinctive and occurring with such frequency in labyrinthine disease that, although it cannot be included under the term vertigo, it ranks high in diagnostic value among what we had perhaps best call vertiginous sensations.

Such vertiginous sensations may occur not only as an aftermath of vertigo, but independently of it in the course of labyrinthine disease, and as such are of frequent occurrence. We may therefore encounter phases (not necessarily with an abrupt onset) in which there is a continued liability to giddiness on walking or on movement of the head. Such phases may be of brief or of long duration, but at most their term is one of days.

There are other symptoms which are frequently associated with vertigo in labyrinthine disease and are of great interest. I shall return to these later. At the moment I wish to follow vertigo and vertiginous sensations as so far described along the path indicated by anatomy and physiology, inquiring in what situations, other than the labyrinth, disease or disordered function may give rise to similar sensations.

Vertigo in Lesions of the Nervous System

LESIONS OF THE EIGHTH NERVE

Judging from analogy we should expect lesions of the afferent pathway from the labyrinth to cause symptoms comparable with those arising from disease of the end-organ. Unfortunately for purposes of our inquiry the diseases—neoplastic or inflammatory—which commonly involve the vestibular nerve in its intracranial course are bound, sooner rather than later, to affect the functions of the vestibular nuclei and their central connexions by interfering with the circulation of the brain stem. Probably for this reason persistent and continuous vertiginous sensations taking the form of unsteadiness or a sense of unsteadiness in walking are an almost constant feature of subtentorial tumours.

The question of the frequency of actual attacks of vertigo in relation to the situation of intracranial tumours is of some interest. Mr. Hugh Cairns has

very kindly helped me in an attempt to answer this question, not only placing the whole of his material at my disposal but collaborating in its analysis. We have thus been able to inquire into the frequency of vertigo in tumours of the cerebello-pontine angle, cerebellum, brain stem, and cerebrum, in a series of cases in which the situation and nature of the lesion has been verified, the history has been taken by the same observer throughout, and the absence or presence of such sensations has been systematically recorded.

The frequency of vertigo in tumours of the cerebello-pontine angle has been variously estimated. Stewart and Holmes [2] in 1904 declared that in their experience vertigo was one of the most constant symptoms of extra- and intra-cerebellar tumours, and was especially frequent in the former. Sydney Scott [3] has stated that in unilateral eighth nerve tumours, vertigo and staggering are constantly present, though these symptoms are not so violent as might be expected. On the other hand, Cushing,[4] in his series of 33 acoustic tumours, published in 1917, noted the occurrence of vertigo only in 5 cases.

In Cairns's group of cerebello-pontine angle lesions there are 16 cases of tumour and one of arachnoiditis localised in the right cerebello-pontine angle. Of the 17 patients 9 gave an account of vertigo. In four instances there was a sense of movement of external objects only, in four a sense of movement of self only, in the other instance both sensations occurred. Eleven of these patients had eighth nerve tumours. Six of these had vertigo. In two of them the symptom was an early one. In one case it was the first symptom. The patient was playing tennis when he felt everything revolving round him, and had to sit down on the grass. Before the actual attack he felt that the ground was coming up at him—a sensation he compared with that of the "witching waves" of fair grounds. The attack lasted two minutes. He thinks objects revolved in front of him from left to right. Afterwards he could not walk straight.

Vertigo then would seem to be an inconstant and on the whole a late symptom of tumours in the cerebello-pontine angle, even eighth nerve tumours. It is arguable that when this symptom does occur it is due rather to compression of the pons than of the vestibular nerve. That this nerve may be severely handled without the production of vertigo is shown by Dandy's [5] observations on the result of section of the eighth nerve for the relief of labyrinthine vertigo. In two out of three cases, in which the nerve was divided under local anæsthesia of the superficial tissues only, the patient was not conscious of any sensation, either when the nerve was being liberated from the surrounding tissues or when it was divided. In the third there was transient vertigo while the nerve was being manipulated, which disappeared when it was severed. Such instances provide a striking contrast between the effects of stimulating the end-organ and the nerve-fibres leading from it.

LESIONS OF THE BRAIN STEM

The vestibular nuclei and their central connexions in the brain stem are liable to damage from vascular lesions which provide opportunity from time to time for precise anatomical localisation. Vertigo is a conspicuous feature of the clinical syndrome of posterior inferior cerebellar thrombosis, and in its intensity and persistence exceeds the worst attacks of labyrinthine origin. Lesions of relatively acute development, such as those of disseminated sclerosis and encephalitis, may give rise to vertigo almost as severe. Tumours of the pons and medulla, though invading the same structures, may give rise to little or nothing in the way of vertigo. In Cairns's series of nine patients with verified tumours of this region only four admitted symptoms of this kind, and in only two of these did it amount to definite vertigo.

It seems then that the occurrence of vertigo in lesions of the brain stem depends largely upon the rate of evolution of the lesion as well as upon its localisation. Vertigo occurring as a symptom of a tumour in this region probably indicates a phase of congestion or œdema of recent development.

LESIONS OF THE CEREBELLUM

Vertigo is commonly regarded as an important symptom of cerebellar disease.

Lesions of vascular or non-suppurative inflammatory origin are practically never confined to the cerebellum but involve the brain stem. Our records of vertigo in association with disease limited to the cerebellum are therefore mainly derived from the symptoms of tumours in this situation, and are subject to the suspicion that the disturbance of function may have arisen in the structures of the brain stem as the result of pressure changes.

That vertigo is at any rate an inconstant symptom of cerebellar tumour is shown in the analysis of 38 cases in Cairns's series. Vertigo is recorded as having occurred in 17 of these, transient sensations of giddiness in another 5, while in the remaining 16 there was no record either of vertigo or vertiginous sensation. The later view of Gordon Holmes [6] is thus confirmed that "it is striking that many patients with tumours of the cerebellum never complain of giddiness, and in other there may be little or no sensation of movement of self or of external objects."

It should perhaps be added that in the series of patients just mentioned, 17 proved to have tumours mainly, if not entirely, confined to the middle lobe, and 11 of these were recorded to have had vertigo, whereas of the 21 patients with lateral lobe tumours only 6 complained at any time of this symptom.

LESIONS OF THE FOREBRAIN

Though we are ignorant of the connexions which presumably exist between the vestibular nuclei and the cerebral cortex, we are familiar with the occurrence of vertigo as an epileptic aura. Gowers [7] writes of his series of 1145 cases of epilepsy in which some aura existed that "in no less than 18 per cent. of the warnings the aura was sudden vertigo, generally definite."

The sensation may be of movement of external objects or of self, or there may be actual rotation or falling just as in labyrinthine disease. The vertigo which is of brief duration may be the precursor of convulsion, it may end simply in loss of consciousness, or it may occur alone as in the case of other epileptic auras without the development of an attack. It is, however, never followed by those vertiginous sensations —unsteadiness on walking or on movement of the head—which are the common sequel of vertigo arising from disturbance of function at the lower levels.

Our main source of information as to the relation of vertigo to the situation of organic disease of the forebrain is again derived from cerebral tumours. Ill-defined sensations of giddiness are common in all cases of supratentorial tumour during phases of increased intracranial pressure. True vertigo is however an uncommon symptom in tumours of the forebrain.

This symptom, having been especially looked for in Mr. Cairns's series and indexed when found, we

discovered to have been present in 13 out of 242 supratentorial tumours. In five of these the situation was frontal; in three it was parietal; in two temporal. Of the other three cases one was a suprasellar cyst, another a suprasellar aneurysm, and the third a right-sided subdural hæmatoma. Sensations of movement in the surroundings and of self, and actual falling were recorded. In the case of one patient with a left frontal meningioma vertigo was the earliest symptom. He described his attacks as a feeling as if he was going round and the furniture in the room was going round. He did not fall down but had to hold on to things. The sensation would last for two or three minutes. The first attack occurred when he was riding a bicycle and he fell off.

So far as it is safe to draw conclusions of this kind from the data provided by cerebral tumours, we may infer that vertigo may result from lesions variously situated in the cerebral hemispheres. Holmes [6] states the same opinion and asserts that involvement of the cortex or subcortical white matter is essential.

The conclusions we have so far reached may be briefly summarised as follows. Vertigo of the type frequently encountered in disease of the labyrinth may occur with lesions of the eighth nerve, brain stem, cerebellum, and forebrain. It occurs most certainly with lesions of an acute type in the medulla and pons (vascular lesions, encephalitis, and disseminated sclerosis). The inconstant appearance of vertigo as a symptom of tumours of the cerebellum or cerebello-pontine angle raises the suspicion that in such cases it is caused by secondary disturbance of function in the brain stem as the result of vascular congestion. Vertigo as an epileptic aura or with tumours of the forebrain is not as a rule followed by vertiginous sensations of the kind almost constantly encountered when the disturbance has arisen at any of the lower levels.

Labyrinthine Disease

SYMPTOMS ASSOCIATED WITH VERTIGO

I will now return to the consideration of the symptoms which may be associated with the vertigo of labyrinthine disease. *Nausea*, *vomiting*, *pallor*, and *sweating* are so frequently encountered that they need no comment. *Diarrhœa*, though it is not a common symptom, may in association with the vomiting lead so easily to an erroneous diagnosis that its occurrence deserves emphasis.

A medical patient has described to me a severe attack of vertigo and vomiting, in which before it was possible for him to move or be moved he was conscious of an increased but painless peristalsis, so vigorous that it resulted in a quite irresistible evacuation. The same observer writes: "Increased peristalsis is common, but is more variable in degree than any other symptom. I had serious trouble from it on only one occasion, but it may be present in quite slight attacks."

Cephalic sensations are divisible into two groups: those which occur at the moment of the attack; and those which may precede or follow it. The latter are extremely common, and are often complained of as headache, though described rather in terms of discomfort than pain—a sense of pressure, stiffness, numbness, or congestion referred to the back of the head or neck, or to the region behind the affected ear. Headache of this kind is not infrequently associated with giddiness among the patient's leading complaints, and may even precede it.

The sensations which may occur at the moment of the attack are described in varied and curious terms, of which the following are examples. "As if a wheel had been turned round at the back of my head," "something suddenly quivering in the head," "as if something moves quickly over my brain," "a sensation like an electric current up the back of my head," "a sensation in the head like that of a revolving dynamo." Often the sensation beggars description and is referred to as a "nasty feeling." One patient gave the following account of minor attacks which would not be accepted under the heading of vertigo, but are nevertheless distinctive of vestibular disturbance. "I have a nasty feeling in my head, think 'that's it,' move my head to see—know I've got it, and must sit still till its over."

That *loss of consciousness* may occur in labyrinthine vertigo is sometimes disputed, but I have met with several instances in which the occurrence appeared beyond doubt. Gowers [8] was of the same opinion.

I have notes of two attacks in this series in which *diplopia* was clearly described by the patient. Gowers,[9] who missed nothing, stated that he had several times known double vision to occur after or during a paroxysm, and Mygind [10] has also recorded this symptom.

Diminished tone on one side of the body is usually confined to the muscles of the neck, causing the rotated position of the head (occiput towards the "affected" shoulder) which, as emphasised by Russell Brain,[11] is, like nystagmus, a common and important sign of recent labyrinthine disturbance. Rarely hypotonia may be observed in the limbs of the affected side and may be appreciated by the patient.

The medical patient from whose account of his own symptoms I have already quoted, described a disturbance of function in the arm and leg which he said "feels like a mixture of slight numbness and slight loss of control. The arm is less affected, or rather the disturbance is less noticeable there, but the leg in walking seems to swing to some extent by its own weight like a pendulum." This in greater or less degree he had observed after several of his attacks.

PATHOLOGY

Upon the vexed question of pathology in labyrinthine disease I shall not venture to embark without reefing my sails. I have hitherto maintained a resolute objection to the use of the term Ménière's disease as opposed to Ménière's syndrome. The latter conveys to me a triad of symptoms—deafness, tinnitus, and vertigo—which indicate disease of the labyrinth or eighth nerve, whatever may be its cause. I perceive, however, that the use of the term Ménière's disease to describe this conjunction of symptoms in cases in which the pathology is unknown has much the same kind of justification as the term idiopathic epilepsy.

Mygind [12] and Dederding [13] propose to use the term Morbus Ménièri "as designating a disease which so far as the ear is concerned shows itself by a varying function both of the acoustic and the static part and with regard to which it has been possible to exclude any specific ætiology." In this sense Ménière's disease is undoubtedly the most frequent cause of vertigo as seen by the neurologist. In this malady or group of patients vertigo may occasionally precede tinnitus and deafness by months or years. It is often conspicuous at a stage in which the rotary and caloric tests of labyrinthine function show no abnormality (Mygind). I venture at this point to express my doubts as to the validity of the claim sometimes made by otologists that a positive response to the caloric tests excludes the presence of intra-labyrinthine disease. Functional tests of this kind are surely coarse in relation to the function they are designed to test. An abnormal response may justly be accepted as proof of disease, but the converse assumption is unwarrantable.

As a sequel of head injury vertiginous sensations are extremely common, and vertigo by no means rare. The former correspond with the sensations already described in connexion with lesions of the labyrinth and brain stem; complaint of giddiness on quick movement of the head is the most frequent and the most distinctive symptom. Both these sensations and true vertigo are apt to follow the injury after a latent interval of several days up to three or four weeks. There is seldom any associated complaint of deafness or tinnitus with traumatic vertigo, and for this reason perhaps the tendency has been to refer this symptom to a lesion of the brain stem. It occurs, however, so often after minor accidents and without any association with other evidence of brain stem contusion that I believe this theory is untenable, and that the lesion must be in the vestibular part of the labyrinth. This view has been discussed and upheld recently by Linthicum and Rand [14] in America, and by Bremer, Helsmörtel, Barré,[15] and others on the continent. These observers are unanimous as to the presence of abnormal response to the caloric and rotary tests in a large number (50 to 80 per cent.) of the cases, without any defect of cochlear function. The further investigation of traumatic vertigo by the otologist using objective tests of labyrinthine function is clearly desirable, if only as an aid to diagnosis in compensation cases.

Vertigo in patients with a high blood pressure and thickened arteries is not uncommon. In many instances it is associated with a persistent tinnitus—the noises being complained of as in the head rather than the ears—often of a roaring character. It is presumably due to small vascular lesions which may be in the labyrinth in some cases, and in the brain stem in others.

Borderland Vertigo

It is impossible to leave the subject of vertigo without reference to its occurrence in attacks whose point of origin and causation are equally unknown, which belong neither to Ménière's disease, epilepsy, or migraine, but are related to all three. They are admirably discussed by Gowers in his little book called "The Borderland of Epilepsy."

The difficulty in giving any concise account of this aspect of vertigo lies in the variety of form presented by the attacks and the consequent difficulty of classification.

I have no doubt, from clinical evidence, of the affinity between migraine and epilepsy. The exchange of one for the other in the same patient is not uncommon. Epilepsy, as we have seen, not infrequently has vertigo for its aura. Attacks of a transitional character between vertiginous epilepsy and migraine may possess some of the characteristics of each.

There is also, I believe, a connexion between migraine and Ménière's disease. I have long had this impression, and have been interested to find that among the 100 patients with Ménière's syndrome, taken as a consecutive series in private practice for purposes of this analysis, there are 14 who gave a story of migraine. If all cases (with or without migraine) are excluded from the series in which there was any suspicion of an infective or traumatic origin for the vertigo, there are 11 instances in which the story of migraine was associated with that of Ménière's disease (in Mygind and Dederding's sense) out of a total of 85. The evidence for migraine was in eight cases the occurrence of a characteristic visual aura, and in the remaining three a liability to recurrent sick headaches from childhood with a family history of the same liability. Thus, at the most conservative estimate, a history of migraine occurs in over 9 per cent. of the patients with Ménière's disease.

Two patients had attacks of migraine, epilepsy, and vertigo, with tinnitus and deafness, each variety of attack being quite characteristic.

Thus a man aged 56, whose father and mother had both suffered from migraine, himself had attacks with the usual visual aura up to the age of 40. He then began to have momentary attacks in which "the ground came up to meet him." A few years later he began to notice bilateral tinnitus and deafness, and had several severe attacks of vertigo ("the whole world going round") with vomiting, but no loss of consciousness. On three occasions he had attacks which he recognised as of another quality. He would suddenly lose himself for a moment or two, wonder what was happening, and then remember that what was in his mind was an incident in a dream he must have had at some time—a sensation characteristic of epilepsy.

A story of migraine may also be associated with that of attacks of vertigo without any development of deafness or tinnitus. The vertigo in these cases does not usually take the form of an aura preceding headache, but is an independent occurrence.

Vertigo in "Neurasthenia"

Vertigo, or at least vertiginous sensations, may be the leading complaint in those minor states of mental depression usually called neurasthenic. It is described as an almost continuous sensation of unsteadiness. I cannot give any account of this save by illustration.

A married woman, aged 28, without cause became depressed and frightened, and from the first complained of giddiness "as if I'm swaying and as if my legs were going to give way and let me down." These complaints continued for one year without intermission. She then became quite well and ceased to attend hospital. Fourteen months later she returned stating that she had "felt lovely" until a week previously when again without cause she became frightened, dazed, and irritable. On her father's side an aunt died in a neurasthenic state, an uncle was certified in a state of depression, and a cousin after childbirth has passed through an illness similar to the patient's.

Vertigo in this setting is not uncommon, and is complained of by patient after patient in terms which show little variation. It must surely be regarded as a physical symptom of the illness.

REFERENCES

1. Selected Writings of John Hughlings Jackson, London, 1931, vol. i., p. 309.
2. Stewart, T. G., and Holmes, G.: Brain, 1904, xxvii., 522.
3. Scott, S.: Proc. Roy. Soc. Med., 1924, xvii. (Sects. Med., Neur., Ophth., and Otol., p. 10).
4. Cushing, H.: Tumours of the Nervus Acusticus, Philadelphia and London, 1917.
5. Dandy, W. E.: Arch. of Surg., 1928, xvi., 1127.
6. Holmes, G.: Proc. Roy. Soc. Med., 1924, xvii. (Sects. Med., Neur., Ophth., and Otol., p. 7).
7. Gowers, W. R.: Epilepsy, London, 1901, 2nd ed., p. 67.
8. ,, ,, : Borderland of Epilepsy, London, 1907, p. 49.
9. ,, ,, : Diseases of the Nervous System, London, 1888, 1st ed., vol. ii., p. 719 et seq.
10. Mygind, S. H.: Acta Otolaryngol., 1928–29, xiii., 403.
11. Brain, W. R.: Brain, 1926, xlix., 61.
12. Mygind, S. H.: Acta Otolaryngol., 1928–29, xiii., 393.
13. Dederding, D.: Ibid., 1929, Suppl. x., p. 8.
14. Linthicum, F. H., and Rand, C. W.: Arch. Otolaryngol., 1931, xiii., 785.
15. Bremer et al.: Rev. Neurologique, 1932, ii., 386 et seq.

BELFAST MATER INFIRMORUM HOSPITAL.—In the year ending on June 30th last this hospital treated 2640 in-patients, 58,628 out-patients, and 14,798 accident cases. The out-patient department is reported to be "totally inadequate."

TISSUE CULTURE IN ITS RELATIONSHIP TO SURGICAL PATHOLOGY *

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THE BEHAVIOUR OF CELLS IN VITRO

Dedifferentiation.—Cells which are multiplying freely in vitro have usually an entirely different form from that in the original tissue. They fall into three groups :—

1. *Epithelial tissue* grows typically as a continuous sheet of mosaic-like flattened cells (Fig. 1).
2. *Macrophage system* (reticulo-endothelial system). Cells in this group grow as isolated motile cells, retaining the typical morphology of macrophages in the active or the resting state.
3. *Other mesodermal cells* grow as a network (possibly a true syncytium) of cells resembling fibroblasts; and are usually morphologically indistinguishable from these or one from another. Many workers refer to them indiscriminately as fibroblasts (Fig. 2).

A glance at a culture will usually suffice to show to which group its cells belong, but the most careful scrutiny may fail to reveal their origin within the group. The change of form in culture was formerly ascribed to a permanent reversion to a more primitive type—"dedifferentiation." This term is still applied, but it is realised that the reversion is not permanent or immutable. For instance, the outgrowth from hyaline cartilage is of dedifferentiated cells without matrix, but, if these are grafted subcutaneously into a homologous animal, they redifferentiate into a nodule of typical cartilage cells, lying in a matrix. Furthermore, the fibroblast-like cells derived from various tissues (heart-muscle, bone, cartilage) have a differing physiology, as shown, for instance, by the optimum concentration of embryo extract required for the growth of each. In special circumstances those from the heart show pulsation.

Redifferentiation.—Reference has just been made to the fact that cells which have dedifferentiated in vitro may be made to redifferentiate when replaced in vivo. In certain circumstances they will redifferentiate in vitro. Sometimes differentiation takes place in dedifferentiated epithelial cells when they are brought in contact with mesodermal tissue. An example is provided by renal epithelium, which grows ordinarily as a sheet of cells but forms rudimentary tubules on the addition of a culture of fibroblasts. A. H. Drew (1922) found that the parenchyma of mouse carcinoma 206 growing alone formed sheets, but if accompanied by the growth of stroma it formed acini. This has been considered a specific effect of the mesoderm, but possibly its action is either purely mechanical or through retardation of growth. An analogous phenomenon, explicable on such a basis, is provided by thyroid epithelium. On the surface of a clot this grows as a sheet, but in the substance of such a medium it forms acini containing colloid material. Frequent cellular division, ordinarily essential for longevity in culture, prevents differentiation. Recent developments in technique have made it possible to retard the growth of certain cultures without prejudicing their prolonged survival. In these circumstances redifferentiation has apparently occurred.

Differentiation in vitro.—If a whole embryonic organ is explanted cells grow out freely from the cut portions and dedifferentiate, as has been described. In the explant itself, however, where this "uncontrolled growth" is impossible, "controlled growth" occurs just as in the embryo, but more slowly. At the same time differentiation occurs here almost as rapidly as in vivo. Thus, an explant of early embryonic femur, consisting of undifferentiated cartilage cells and matrix, grows and shows differentiation into large and small-celled cartilage, the formation of phosphatase from the large-celled cartilage, and an encasement of subperiosteal bone. Likewise, in apparent defiance of Wolff's law, the explant undergoes the same changes in shape as it would have undergone if left in its natural environment.

Pure strains of cells.—Some workers have attached great importance to the use of pure strains of cells, as in bacteriology. The usual method of isolation depends on the assumption that repeated subculture in identical media will eliminate all but one variety of cell.

Cellular variation and mutation.—The observation that dedifferentiation is a reversible process and does not imply a permanent modification of cells is true only in a favourable medium. An unfavourable environment may modify cells in such a way that no means are known which will convert them back into their original form. Examples of such an unfavourable environment are provided by the action of potassium iodide, bacterial toxins and some tissue extracts, or by exposure to radiation by X rays or radium. Cells thus permanently modified breed true. It is possible that the cancer cell arises in this way, as a mutation arising in an unfavourable environment. This speculation, adapted to modern genetic views, is at present receiving prominence as the gene mutation hypothesis of cancer.

HEALING OF WOUNDS

In a small wound which heals in a relatively short time the injury damages a few cells, liberating tissue juices which stimulate the neighbouring cells to amœboid activity and multiplication, just as, in vitro, tissue extract will bring about the outgrowth and multiplication of adult cells, which remain quiescent in pure plasma. This mechanism may be preceded by sliding of the edges of the wound towards one another, as is the case with wounded epithelium in plasma cultures.

In an extensive wound, healing by granulation, the initial stimulation by the products of cell injury is negligible in comparison with the extent of the deficiency to be made good; some other mechanism must be conceived. With such a wound there is always an initial latent period (the "calm" or "period of repose" of Paget) during which healing is in abeyance; and, in the case of a superficial wound, the length of this period may be diminished by an irritating dressing. The end of the period and the onset of healing is marked by the congregation of leucocytes in the wound. Their action is presumably to be compared with that of living leucocytes in culture where they provide a substitute for embryo extract in initiating and maintaining growth. C. J. Bond (1918) has shown that living leucocytes encountering a dressing become damaged and adherent to it, and suggests that this is partly responsible for the injury done to granulating wounds by the frequent changing of dressings. Healing, once started in a sterile

* Abstract of Hunterian Lecture delivered before the Royal College of Surgeons of England. This lecture will appear in full, with a complete list of references, in the St. Bartholomew's Hospital Reports, 1933.

superficial wound, proceeds in accordance with du Noüy's formula, i.e., is independent of extraneous influences. Infection, with consequent leucocytic infiltration, might be expected to accelerate healing. In fact it does shorten the latent period, though it retards the progress of healing once this has started. This is possibly due to liquefaction of fibrin trabeculæ, as is seen in infected cultures, and to toxins; and Strangeways has compared the cytological abnormalities found in infected wounds with those found in cultures in unfavourable media.

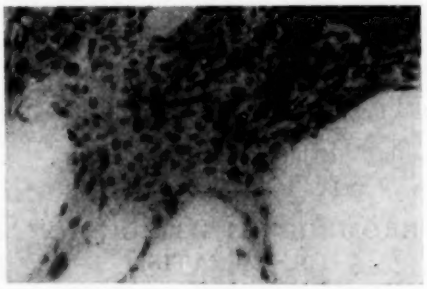


FIG. 1.—Character of growth of epithelial cells (parenchyma of spontaneous mammary carcinoma of mouse, × 110).

A. Carrel and A. H. Ebeling (1921) suggest that delayed healing in the old and in the infirm is a humoral phenomenon. From measurements of the extent of outgrowth of cultures in various samples of blood-serum they concluded that this contains growth inhibiting substances which increase with age, and probably also growth-activating substances which diminish with age. Animals injected with sterile pus showed a diminished rate of healing, and their serum was abnormally inhibiting in vitro.

THE CELLS IN CERTAIN LESIONS OF SURGICAL IMPORTANCE

Round cells of inflammatory foci.—The origin of the lymphocytes and polymorphonuclear cells is not in doubt; they come from the blood by diapedesis. The origin of the congregated macrophages, on the other hand, has long been a vexed question. They are so numerous that it has seemed impossible that they could all be derived from the very scanty large mononuclear cells of the blood or from the clasmatocytes (the resting macrophages of connective tissue) as these show little evidence of mitosis, and the occurrence of amitotic division is doubtful. Tissue culture provides evidence of two sources: (1) the lymphocytes (Maximow), and (2) the fixed tissue cells (Fischer).

Formation of multinucleate cells.—In an unfavourable medium, fibroblast-like cells often tend to become multinucleate. Fig. 3 is an example of such a change occurring in a culture of fibroblast-like cells from embryonic periosteal tissue. Strangeways has described three anomalies of mitotic cell division which produce this phenomenon.

Formation of foreign body giant cells.—In 1912 R. A. Lambert, using lycopodium spores and cotton fibres as foreign bodies, observed the formation in vitro of multinucleate giant cells, apparently by fusion of macrophages. The cover-slip itself was sufficient to produce the change in cells adherent to it. Fibroblast-like cells did not react in the same way. The first observation was confirmed in the following year by S. C. Weil, but he believed that amitotic nuclear division played a part in addition to the coalescence of cells.

Origin of the cells of a tubercle.—The nature of the "epithelioid cells" of the tubercle has long been debated; and, prematurely perhaps, they have been renamed in this country "endothelial cells" on the assumption that they arise from vascular endothelium.

A. Maximow (1924) has demonstrated in rabbit tissue cultures, inoculated with human tubercle bacilli, the conversion of macrophages into epithelioid cells, and these into giant cells of tuberculous type. He confirmed H. F. Smyth's observation (1916) that the latter change was mainly by fusion of the epithelioid cells. This is not necessarily the mode of formation of tuberculous giant cells in man. Timofejewsky and Benewolenskaja (1927) whilst confirming the observations on rabbit tissue found that, in the case of cells of human origin, the giant cells were formed mainly by nuclear division in the epithelioid cells, rather than by fusion, and they correlate this discrepancy with the greater susceptibility of human tissues than rabbit to the human type of bacillus, which is observable in vitro as well as in vivo. Some of the tubercle-like areas show central necrosis. Maximow further produces evidence that the toxins responsible for the cellular changes are derived from the bacillus directly, and not from disintegrated cells as some have contended.

Cells of the myeloma. (Benign giant-celled tumour of bone.)—This is coming to be regarded as an osteoclastoma; and it has been suggested, by the analogy of tissue culture, that multiplication of the osteoclasts produces the spindle cells by dedifferentiation. The analogy is doubtful, because, while the formation of giant cells in culture is familiar, the reverse—their separation into mononucleate cells—is almost unknown; however, the possibility of such a change cannot be denied, and C. C. Macklin (1916) observed the occasional formation of two mononucleate cells from a binucleate by the fusion of nuclei and subsequent mitosis. In a cinematograph film of a myeloma in culture, prepared by Dr. G. O. Gey, the giant cells have not dedifferentiated, though this might be accounted for by a medium unfavourable to cellular division and therefore to dedifferentiation. This origin of the spindle cells would discount the view of some that the myeloma giant cells are of macrophage type, because such could not be expected to dedifferentiate directly into spindle cells which are typical fixed tissue cells. It is also difficult to derive the giant cells from the spindle cells, which type in culture form a different variety of multinucleate cell, having its counterpart in the irregular giant cell of malignant tumours. That of the myeloma resembles

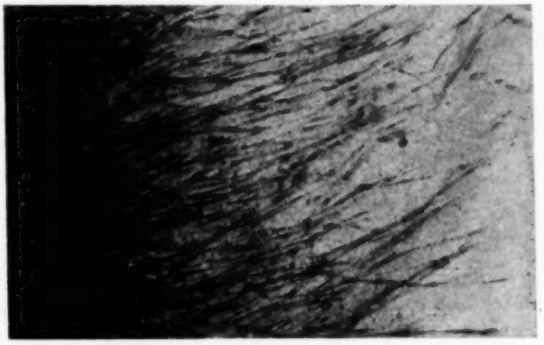
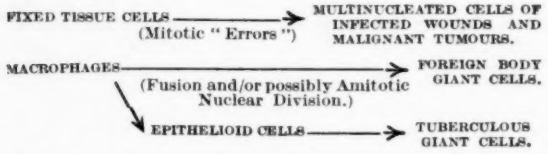


FIG. 2.—Character of growth of fixed mesodermal cells (fibroblast-like cells from embryonic chick heart after 20 years in vitro, × 110. Preparation very kindly provided by Dr. Carrel).

more closely the type which has already been described as formed by macrophages in the presence of foreign bodies. The two, though distinct, are often confused even in tissue culture literature. One concludes that the evidence of tissue culture is contrary to close kinship between the two prevailing types of cell in the myeloma.

The following scheme summarises the formation of various types of multinucleate cells based on the evidence of tissue culture.



Summary of the formation of multinucleate cells from the viewpoint of tissue culture evidence.

MALIGNANT TUMOURS

Human malignant tumours have been grown in vitro for short periods by various workers. The use of human material, however, is attended by considerable limitations and technical difficulties, so that most work has been done with animal tumours, though even these are on the whole less easily cultivated than embryonic tissues. Those which can be propagated by grafting or by the use of a cell-free filtrate have been of particular value.

The parenchyma of carcinomata grows in epithelial columns or sheets, whereas the fibrous tissue stroma gives rise to spindle cells of the usual fibroblast type. The cells of sarcomata, like those of other mesodermal tissues, grow as fibroblast-like cells, mixed usually with a few macrophages in the earlier passages.

Rous sarcoma gives a growth of both macrophages and fibroblast-like cells. The filtrable infective substance is associated with the macrophages and

FIG. 3.—Multinucleate cells formed in vitro, × 1000.

continues to be produced in vitro. Normal macrophages of the fowl can be rendered malignant by the addition of Rous's substance, whereas this has no apparent effect on fibroblast-like cells.

Those tumours which may be propagated by grafting do not lose this characteristic during their life in vitro.

While the appearance of malignant tumours growing in vitro is very like that of normal cells, various peculiarities in behaviour have been described. Time has shown that most of these are not specific and they will not be discussed here.

A characteristic of the stroma of carcinomata described by Drew deserves mention. He observed that this, though derived from the adult host, behaved in culture like an embryonic tissue, proliferating abundantly, whereas ordinary adult tissues are grown with difficulty.

CONCLUSION AND PROSPECT

Tissue culture, now a quarter of a century old, has produced no revolutionary discovery, but it has contributed information that was otherwise inaccessible, and this itself is justification for a method often costly and laborious. Insufficient caution has been exercised in attaching in-vivo significance to in-vitro phenomena, and in assuming that knowledge of embryonic cells applies also to adult. While tissue culture in its present form has still much to contribute, rapid strides are unlikely until technique has greatly improved. The inability to produce an intrinsic circulatory system, the use of such inconstant and complex material as plasma and embryo extract, and the impossibility of obtaining and maintaining most types of cells in pure culture, are at present insuperable difficulties in many problems.

THROMBO-PHLEBITIS IN ACUTE RHEUMATISM

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With Clinical Case Notes by

O. C. M. Davis, M.D., D.Sc., M.R.C.P., *and*

Bernard Schlesinger, M.D., M.R.C.P.

In 1840 Bouillaud, in his classical treatise on acute rheumatism,[1] stated that while the occurrence of phlebitis in this disease was not common it was by no means so rare as was usually believed. However, some at least of the cases reported by Bouillaud were obviously not true cases of acute rheumatism, and appear rather to be cases of pyæmia, since the arthritis was described as purulent and pus was also found in other organs.

Schmitt, in a thesis on rheumatic phlebitis,[2] collected 16 cases from the literature up to 1884 and added one he had personally observed. He believed that venous thrombosis was a rare but definite complication of acute rheumatism, and argued that the thrombosis is not due to any change in the vein itself, but rather to some alteration in the blood predisposing to thrombosis. In the same year Letulle [3] described a case and came to the conclusion that phlebitis was a rare complication of acute rheumatism; he thought that while venous stasis from the coexistent heart disease might play a part in the causation of the venous thrombosis, the important factor was an antecedent endophlebitis. Remlinger [4] describes the case of a man, aged 38, who in his first attack of acute articular rheumatism experienced venous thrombosis in the right leg, right arm, and left leg. In each case the swelling of the limb was preceded by pain along the course of the vein affected for one or two days. The swelling subsided fairly rapidly, which in his view suggested that the occlusion of the veins was only partial. At no time was there any evidence of carditis and the patient ultimately made a good recovery. In reviewing the literature Remlinger, too, criticises Bouillaud's cases on the ground that they were really pyæmic in nature; however, he found 18 cases recorded which he was prepared to accept as phlebitis occurring during an attack of genuine acute rheumatism. Gatay [5] in 1895, while criticising Bouillaud's cases on the grounds that the arthritis was purulent, found 17 cases in the literature and reported two

more. He noted that pain in the limb frequently preceded any swelling and that the affected vein could often be palpated as a firm hard cord. He describes the histological appearances and states that there is at first an invasion of the wall of the vein

FIG. 1.—A low power view of the thrombosed vein showing part of the wall of the vein and the contained thrombus. The clot has been separated from the vein wall in the process of preparation of the section. M.A. = media and adventitia. T.I. = thrombus and detached intima.

by small round cells with proliferation and desquamation of the endothelial lining. The "fixed cells" of the vein wall proliferate and separate the muscle-fibres. He considers that there is no doubt but that the thrombosis is entirely secondary to the phlebitis.

Poynton,[6] in 1898, described the occurrence of extensive venous thrombosis in three children with acute rheumatism and carditis. Histological examination in one case showed early phlebo-sclerosis in the wall of the vein. He held, however, that it was not possible to decide whether venous stasis or a phlebitis was the initial cause of the thrombosis. Garnier,[7] in 1899, reports two further cases in patients with rheumatic carditis, both of whom recovered. He considered that venous stasis consequent upon the carditis was the main causal factor, but admitted that alterations both in the blood and in the vein itself may play a part. Welch,[8] in 1900, reviewed 28 cases of venous thrombosis occurring during the course of cardiac diseases in general, and from the fact that joint symptoms immediately preceded the thrombosis in only three cases believed that, in the cases studied, acute rheumatism played only a minor part. Hess,[9] in 1902, reported two cases, one of which was fatal, with thrombosis of superior vena cava, and left jugular and subclavian veins. Section of the thrombosed vein showed marked infiltration of the wall of the vein and the surrounding tissues with small round cells.

In 1908 Herringham [10] reported on a patient with chronic rheumatic heart disease who developed successive venous thromboses during a relapse of acute rheumatism. She ultimately made a good recovery. Glaser [11] reported a case in 1913 but held the venous stasis, from the heart disease, to be largely responsible. In the first edition of Garrod, Batten, and Thursfield's text-book on diseases of children, Voelcker [12] describes a boy aged 13 with severe chorea but with no evidence of carditis who developed thrombosis in both femoral and saphenous veins, but ultimately made a complete recovery. In a review of venous thrombosis complicating myocardial insufficiency, Sladen and Winternitz [13] found that while 26 of 65 collected patients dated their heart disease from an attack of acute rheumatism, the time relationship of the venous thrombosis to the rheumatism varied from 6 months to 40 years. Poynton,[14] in describing a case of inferior vena cava thrombosis in a child with acute rheumatism and carditis, states that he has never seen a case of venous thrombosis in rheumatism except in the acute stage, which he considers suggests that there is an active infection of the vein itself. In the second edition of Garrod, Batten, Thursfield, and Paterson's text-book Poynton stated, in 1929,[15] that he had seen in all eight cases of venous thrombosis in acute rheumatism, all associated with severe heart disease. Sindoni,[16] in 1932, described multiple venous thromboses in a patient dying from acute rheumatism and carditis. Histological examination of the veins showed scars in the media and perivascular cellular collections, and Sindoni thought these changes were rheumatic in nature, but was unable to arrive at any definite conclusions.

Since this brief review of the literature shows that apart from Poynton's reports the question of rheumatic phlebitis has received scanty attention since 1900, the following cases seem worthy of record.

THE FIRST CASE

(CLINICAL NOTES BY DR. DAVIS)

The patient, a girl aged 11 years and 9 months, was admitted to the Children's Hospital, Bristol, on April 18th, 1932. She was alleged to have had an attack of rheumatic fever two and a half years previously and another attack commencing in September, 1931. Since the last attack the patient had been resting more or less. About two months before admission to hospital she seemed breathless, and complained of pains in her joints; she became very languid and had several attacks of vomiting. The day before admission she woke up with marked swelling of left arm which was covered with small spots "like flea-bites."

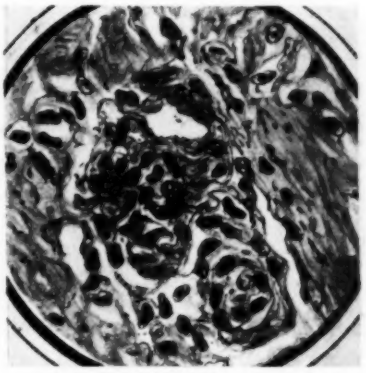

FIG. 2.—High power view of the media of the vein showing one of the collections of cells.

Condition on admission to hospital.—The child was obviously extremely ill and suffering from cardiac distress. Temperature, 99° F.; pulse-rate (right radial), 136; respirations, 30. The heart was much enlarged, especially to the left, the apex-beat being diffuse and more than 1 in. outside mid-clavicular line in fifth interspace. The area of cardiac dullness extended out to the apex-beat. There was a loud systolic bruit with maximum intensity at apex, but heard over the whole of the precordium. The breath sounds were harsh. The left arm and hand were greatly swollen, and exhibited petechial hæmorrhages. The œdema of arm extended to left chest. The left radial pulse was impalpable. The abdomin was a little distended, as were the abdominal veins, and the presence of ascites was diagnosed. There was also œdema of the feet. The urine was free from albumin and remained so throughout. It seemed obvious that only palliative

treatment was possible and under the influence of digitalin, sodium salicylate, and sedatives the patient improved a little for a few days, and the volume of urine passed during the 24 hours increased from 8 oz. to 36 oz. on the ninth day. She complained of great pain in the knees, which were swollen; some relief was obtained by dressings containing local analgesics. On the seventh day the swelling of the left chest extended to the neck and left side of face, gradually extending over the whole of face; the eyelids became very œdematous, completely and firmly closing the eyes. Towards the end the swelling of face and eyelids subsided somewhat, but the child became very much weaker and died on May 3rd.

Post-mortem examination.—There was marked œdema of the face, left arm, and chest, and of the legs. The face and left part of the chest showed a fine purpuric rash. There were subcutaneous nodules on both elbows. The tissues of the neck and of the chest wall on the left side were very œdematous. The left subclavian, the left internal jugular, and the left innominate veins were palpable as hard cords and were completely occluded by a firm, pale, adherent thrombus. The right internal jugular was similarly occluded, but the right subclavian and right innominate veins were free except that the thrombus in the right internal jugular pouted into the lumen at the junction of this vein with the subclavian. Both pleuræ contained free fluid, the left more than the right, and the left lung was almost completely collapsed. All the chambers of the heart were greatly enlarged. There was some fibrosis of the mitral valve and its chordæ tendineæ, and there were recent vegetations on the mitral, aortic, and tricuspid valves. There was no pericarditis. There was marked mural endocarditis of the left auricle. The glands about the bifurcation of the trachea were enlarged and fleshy. The peritoneum contained much turbid fluid. There was a nutmeg liver, and the spleen was dark and firm.

Histological examination of the heart showed the presence of numerous Aschoff nodules throughout the myocardium. Sections of the thrombosed veins show hyperæmia of the adventitia which, with the surrounding tissues, is infiltrated

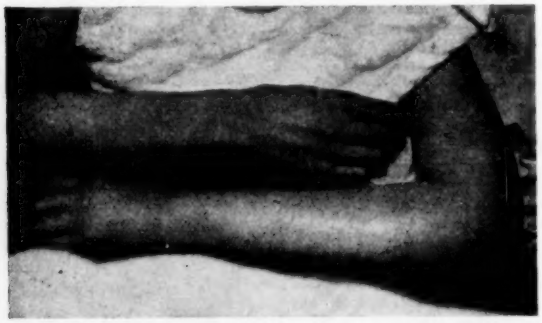

FIG. 3 (Case 3).—Showing the swelling of the left arm and many nodules on the right arm.

with small round cells. The vasa vasorum of the media are dilated, and there are, throughout the media, loose collections of cells which are most noticeable along the course of the nutrient vessels. In general these cells appear to be of connective tissue origin and are spindle-shaped with a large vesicular nucleus. When grouped in the vicinity of a vessel the more centrally placed cells are irregular in shape, and form small "nodules" which closely resemble the Aschoff nodules of the myocardium (Figs. 1 and 2). The thrombus was in most places closely adherent to the intima, which could not be identified at all satisfactorily.

THE SECOND CASE

A man, aged 20, sought treatment for swelling and ulceration of both legs. He stated that at the age of 11 he had a severe attack of rheumatic fever, and, while in bed with this, his legs became swollen and on getting up he had noticed enlarged veins over the lower abdomen. Five years ago varicose ulcers developed on both legs.

There was marked dilatation and varicosity of the superficial veins over the lower abdomen which were prominent up to the umbilicus. The superficial veins of both legs and thighs were tortuous and varicose, and there was ulceration of both legs. The apex-beat of the heart was forcible in the mid-clavicular line. There was an apical presystolic thrill. The first sound at the apex was very accentuated and preceded by a presystolic murmur.

For permission to publish this case I am indebted to Mr. C. Ferrier Walters, who performed an omentopexy in an attempt to relieve the venous congestion.

THE THIRD CASE

(CLINICAL NOTES BY DR. BERNARD SCHLESINGER)

On Nov. 28th, 1932, a girl, aged 13, was admitted to hospital on account of pain in the lower left chest and epigastrium, worse on breathing.

History.—She was an in-patient in the Royal Northern Hospital on account of rheumatism with nodules from August, 1929, to March, 1930, and afterwards had a month's convalescence at West Wickham. She continued to make good progress from then and was attending school about a week or ten days before admission when she developed a cold and cough. The parents noticed some slight swelling of the stomach. A few days later pain occurred in the left side of the chest and in the epigastrium.

Condition on admission.—Temperature, 101·6° F.; pulse-rate, 110; respirations, 25. Looked ill and had a persistent cough. Heart: enlarged; loud apical, systolic, and presystolic murmurs heard. Right lung: percussion note dull at base; breath sounds diminished; some râles heard. Left lung: percussion note resonant; breath sounds harsh. Abdomen: tenderness felt in epigastrium; rigidity of upper half of abdomen; no viscus palpable.

Progress of illness.—Dec. 5th, 1932: rigidity now practically disappeared; liver easily palpable extending down to umbilicus and tender. Dec. 7th: complaining of pain and tenderness in the right trapezius (not the point of the shoulder). Jan. 1st, 1933: nodules disappeared. Jan. 27th: nodules have again appeared on elbows, wrists, and knees. Feb. 3rd: numerous nodules (rt. elbow 7, lt. elbow 6, rt. wrist 3, lt. wrist 3, rt. knee 4, lt. knee 2). Feb. 22nd: left arm commenced to swell and reached its maximum in four days (Fig. 3). Feb. 26th: whole of left arm œdematous from hand up to clavicle. Hard mass palpable in the left posterior triangle (? thrombosis of the left jugular vein). Feb. 27th: hæmoptysis (probably pulmonary infarct). Feb. 28th: œdema of the left arm has subsided with remarkable rapidity and the limb has almost resumed its normal size. Nodules still present on both elbows and both knees, and also the radial aspect of both wrists. March 15th: nodules have been present on all the bony prominences in large numbers. March 24th: there has been considerable pain in the neck from time to time; slight swelling of the left arm still present.

Condition gradually becoming worse with active carditis, rheumatic pleurisy and pneumonia, and cardiac failure.

DISCUSSION

Most observers who have studied venous thrombosis in acute rheumatism hesitate to assign the cause to a definite phlebitis of rheumatic nature. As Welch,[8] and Sladen and Winternitz,[13] amongst others, have shown, venous thrombosis is not uncommon as a complication of congestive heart failure from whatever cause, and it is true that in most of the cases in which it has occurred in acute rheumatism there has been an associated severe carditis. However, in view of the almost constant occurrence of cardiac involvement in any severe attack of rheumatism this is hardly surprising. The cases described by Remlinger[4] and Voelcker,[12] in both of which there were no signs of carditis or of heart failure, provide very strong evidence that the rheumatic infection itself may be responsible for venous thrombosis.

If this be accepted it appears that the thrombosis must be due either to some alteration in the blood

or some inflammatory change in the wall of the vein itself. The histological findings in Case 1, with the endothelial cell proliferation, are very like those seen in rheumatic lesions in other organs and seem to justify the use of the term "rheumatic phlebitis." There is nothing strange in the possibility of the rheumatic virus directly attacking the wall of the vein in view of the well-recognised widespread character of the manifestations of the disease—arthritis, carditis, chorea, nodules—particularly since the characteristic histological picture of the disease has been described in such situations as the arteries by Pappenheimer and von Glahn,[17] in the lungs by Naish[18] and Fraser,[19] the pharynx by Graff[20] and Fraser,[21] and the diaphragm by Shaw.[22] Shaw also described a cellular infiltration of the adventitia of the superior vena cava with swelling of the nutrient vessels in the case which he reported. The fact, noticed by many observers, that pain often precedes the swelling of the limb may be regarded as further evidence of a primary phlebitis antecedent to the secondary thrombosis.

The rapid subsidence of the swelling which occurred in Case 3 and which has been noted by other observers is interesting. Whether it is due to venous occlusion being incomplete in the first instance as suggested by Remlinger,[4] or whether it is to be attributed to the development of an efficient collateral venous return it is impossible to say. A further possibility is that much of the œdema is caused by the involvement of the lymphatics in the inflammatory process, and that with the subsidence of the acute inflammation the lymphatic drainage once more becomes able to remove the greater part of the œdema. Involvement of the lymphatics may be the reason why in some cases the œdema does not develop until some time after the onset of the pain.

SUMMARY AND CONCLUSION

(1) Three cases of venous thrombosis occurring during the course of acute articular rheumatism in childhood are described and a review of other recorded cases is presented. (2) From the clinical features and histological findings it is concluded that a rheumatic phlebitis may occur as a rare feature of acute rheumatism. (3) The venous thrombosis met with during cases of acute rheumatism is secondary to the rheumatic phlebitis.

REFERENCES

1. Bouillaud, J.: Traité clinique du Rhumatisme Articulaire, Paris, 1840.
2. Schmitt, S.: Thèse de Paris, 1884, abstracted in Gaz. Méd. de Paris, 1884, p. 141.
3. Letulle, M.: Gaz. Méd. de Paris, 1884, p. 469.
4. Remlinger, P.: Gaz. des hôp. de Paris, 1896, lxix., 486.
5. Gatay, L.: Thèse de Paris, 1895, abstr. in Gaz. Hebd. de Méd. et de Chir., 1896, i, 133.
6. Poynton, F. J.: THE LANCET, 1898, ii., 206.
7. Garnier, C.: Progrès Méd., 1899, 3 S., ix., 113.
8. Welch, W. H.: Trans. Assoc. of Amer. Phys., 1900, xv., 441.
9. Hess, A.: Deut. med. Woch., 1902, xxviii., 464.
10. Herringham, W. P.: St. Bart.'s Hosp. Rep., 1908, xlii., 30.
11. Glaser, F.: Med. Klin., 1913, ii., 1717.
12. Voelcker, A. F., in Garrod, Batten, and Thursfield's Diseases of Children, London, 1913, p. 958.
13. Sladen, F. J., and Winternitz, M. C.: Johns Hopkins Hosp. Rep., 1916, xvii., 511.
14. Poynton: Practitioner, 1923, cx., 221.
15. ,, in Garrod, Batten, Thursfield, and Paterson's Diseases of Children, London, 1929, p. 881.
16. Sindoni, M.: Il Morgagni, 1932, lxxiv., 92.
17. Pappenheimer, A. M., and von Glahn, W. C.: Amer. Jour. Path., 1927, iii., 583.
18. Naish, A. E.: THE LANCET, 1928, ii., 10.
19. Fraser, A. D.: Ibid., 1930, i., 70.
20. Graff, S.: Deut. med. Woch., 1930, lvi., 603.
21. Fraser: Arch. Dis. Childhood, 1932, vii., 181.
22. Shaw, B. A. F.: Ibid., 1929, iv., 155.

MENINGOCOCCAL VACCINE IN THE TREATMENT OF CEREBRO-SPINAL FEVER

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CEREBRO-SPINAL fever was very prevalent in Lower Egypt during the first quarter of 1932. The number of cases diminished rapidly after the second half of April. Early in the epidemic the course of the disease was very rapid, and it was noticed that most of the cases either died or recovered in a week or at most in a fortnight. The few cases which became chronic were mostly doomed to death. During March the course of the disease began to be prolonged in spite of the intensive treatment with lumbar puncture and antimeningococcal serum; at that time it was thought wise to use meningococcal vaccine.

SOME CASE RECORDS

CASE 1.—A married woman of 30, three months pregnant, was isolated on March 6th, 1932, with a temperature of 100° F. and a pulse-rate of 105; she complained of headache. In the afternoon the temperature shot up to 103·1° F., and the patient became delirious and vomited repeatedly. Lumbar puncture was performed and the cerebro-spinal fluid was turbid and under high tension. On bacteriological examination meningococci were found.

Lumbar puncture was repeated from March 6th to 11th, and 20–40 c.cm. of antimeningococcal serum were given intrathecally, but the symptoms did not show any abatement. Serum therapy was stopped as it had not seemed to be any use, but lumbar puncture was repeated daily until March 21st. On March 22nd the patient was very emaciated and her condition very bad. She objected utterly to further lumbar puncture, and therefore 20 millions of meningococcal vaccine were injected hypodermically. On March 24th 50 millions of vaccine were injected, after which the patient markedly improved and the temperature became normal on the 26th. On the 27th 100 millions were injected and a mild reaction occurred. In the afternoon the temperature became 100·7° F., and the patient complained of headache. This reaction lasted about 12 hours, and then the temperature became normal. On March 30th 20 millions were injected.

Thereafter the vaccine was continued every third day, doubling the dose each time. The patient showed rapid and progressive improvement, except for a mild recrudescence which lasted two days. She was discharged as cured on April 18th, and she was seen on May 31st enjoying good health and her pregnancy was continuing.

CASE 2.—The mayor of a small village, aged 50, was isolated on Feb. 28th, 1932, with fever of 100·4° F. and pulse-rate of 110. He complained of headache, vomiting, and rigidity of the neck. Kernig's sign was positive and the cerebro-spinal fluid was very turbid and under tension. On bacteriological examination meningococci were present.

Ordinary treatment with lumbar puncture and serum was carried out, but the patient's condition was changing from bad to worse and the fever was running an irregular course. On March 26th treatment with vaccine was commenced; the first dose was 20 millions. Vaccine injections were repeated every third day, doubling the dose each time. After the second injection there was marked improvement in the general symptoms, and the fever abated. The patient was discharged on April 18th as cured. He is now enjoying good health.

These two cases were the first to be treated with meningococcal vaccine in my series. Owing to the promising results I used it in the treatment of acute cases which did not improve within two or three days on ordinary treatment. The vaccine was also

used in cases complicated with inflammatory conditions such as arthritis and pleurisy.

CASE 3.—A girl of 12 was admitted to Zagazig Fever Hospital on May 3rd, almost comatose; the cerebro-spinal fluid was under high tension and very turbid. On bacteriological examination meningococci were present in the fluid.

On May 3rd 40 c.cm. of serum were injected intrathecally, and on the next day 30 c.cm. were given, and this dose was repeated for four days. On May 5th the patient's condition was serious and no improvement in the general symptoms was seen. Therefore vaccine therapy was commenced with 5 millions, repeating the injections every third day and simultaneously doubling the dose. The patient rapidly improved, in spite of stopping serum therapy, after May 6th.

CASE 4.—A farmer of 19 was isolated on April 9th, 1932, with fever of 100·4° F. and pulse-rate of 110. He complained of headache, vomiting, and rigidity of neck; Kernig's sign was positive and the cerebro-spinal fluid was very turbid, under high tension, and contained meningococci.

Ordinary treatment by lumbar puncture and intrathecal injection of serum was carried out from April 9th–20th, but the patient's condition was rapidly getting worse. On April 12th he developed double synovitis of both knee-joints. On April 16th aspiration was performed and ℥ss. of purulent fluid was aspirated from each joint and 10 c.cm. of serum injected locally. However, no improvement occurred either in the general condition or in the knee-joint.

On April 20th 20 millions of vaccine were injected, and thereafter a course of vaccine was given. The patient rapidly improved, in spite of the cessation of serum injections and lumbar puncture. Locally lead subacetate fomentations were applied four-hourly to the knee-joints, which rapidly improved without any further aspiration. The patient was discharged completely cured on May 18th.

METHOD AND DOSAGE OF MENINGOCOCCAL VACCINE

The vaccine is injected hypodermically in the outer side of the arm in the following doses:—

1. *For adults.*—In acute cases the first injection is 5 millions, in subacute cases 10 millions, and in chronic cases 20 millions. The injections are to be repeated every third day, simultaneously doubling the dose. When the amount reaches 600 millions it is much better to repeat this amount every five to seven days until recovery than to increase the dose any more. The course usually consists of six to twelve injections.

2. *For children.*—The dosage given is as follows:—

Up to 6 years	¼ the adult dose.
From 6 to 12 years	½ „ „ „
„ 12 to 16 „ ..	¾ „ „ „

In my opinion sex has no effect on the dosage. The doses are not, of course, absolute, and the ordinary rules of vaccine therapy should be followed. The meningococcic vaccine is prepared so that each cubic centimetre contains 1000 million microbes; and therefore to get small doses it should be diluted with sterile water 1 : 50.

In subacute and chronic cases vaccine therapy may be used alone combined with simple lumbar puncture, which should be repeated according to symptoms, tension, and turbidity of the cerebro-spinal fluid. In such cases antimeningococcal serum, in my experience, is of little value because, had it been of any effect, the patient would have recovered in 7–15 days.

ANALYSIS OF CASES TREATED WITH VACCINE

Between March 22nd and June 2nd, 1932, 30 cases were treated with antimeningococcal vaccine. The period in which the treatment was begun varies.

1. In 15 cases the vaccine was used during the first week of isolation; these may be considered as acute cases. The vaccine was only used in acute cases which had not responded to ordinary treatment within the first two or three days.

2. In 8 cases the vaccine was used during the second week of isolation; these may be considered as subacute cases.

3. In 7 cases the vaccine was used after the second week of isolation; these may be considered as chronic cases.

The result of the treatment was as follows:—

Acute cases.	Deaths.	Subacute cases.	Deaths.	Chronic cases.	Deaths.
15	5	8	0	7	0

The percentage of deaths in acute cases is 33·3, while the total proportion of deaths is 16·7 per cent. The cases of cerebro-spinal fever which were admitted from January to May, 1932, and the result of their treatment is shown in the following Table.

Month.	Cases.	Deaths.	Remarks.
January ..	36	21 (58·3 %)	None of the cases was treated with vaccine.
February ..	74	34 (45·9 %)	
March ..	82	49 (59·8 %)	8 cases were treated with vaccine; all recovered.
April ..	36	20 (55·6 %)	13 cases were treated with vaccine; 3 died.
May ..	15	7 (46·67 %)	6 cases were treated with vaccine; 1 died.
Total ..	243	131 (53·9 %)	

These figures are taken from the records of Zagazig Fever Hospital, Lower Egypt.

The value of meningococcal vaccine in the treatment of meningitis is very evident, especially if we take into consideration the fact that the vaccine was only used in complicated cases or in cases which did not respond to ordinary treatment.

CONCLUSIONS

Lewkowicz,[1] in an article on the pathogenesis of cerebro-spinal fever, mentioned the use of meningococcal vaccine in the treatment of this disease, but said that the antibodies did not appear in sufficient quantity in the ventricular fluid. However, cerebro-spinal fever is a septicæmic disease in some stage or other and vaccine therapy should be of value. Egerton [2] mentioned the use of vaccine in the treatment of the acute stage, but in my experience it is more indicated in the subacute and chronic cases. From the observation of more than 200 cases of this disease, I consider that meningococcal vaccine should have its place in the treatment of cerebro-spinal fever. It is indicated in (1) subacute and chronic cases; (2) inflammatory complications—e.g., arthritis and pleurisy; (3) cases which are not affected by ordinary treatment. It is relatively indicated in (1) acute cases which become worse in spite of ordinary treatment, although the disease in most of these cases is fatal; (2) nervous and eye complications. In fulminating and hyperacute cases the vaccine has no effect in the first stage of the illness, and the best method of treating these cases is repetition of lumbar puncture and administration of serum intrathecally and intravenously with glucose solution in the following proportions:—

Antimeningococcal serum	40 c.cm.
Glucose solution	250 c.cm.

To be repeated every 12 or 24 hours.

Simultaneously adrenaline should be injected subcutaneously to guard against any anaphylactic tendency.

REFERENCES

1. Lewkowicz, K.: THE LANCET, 1924, ii., 487.
2. Egerton, H. W.: Jour. Roy. San. Inst., April, 1932.

TWO CASES OF TYPHOID FEVER WITH APPARENTLY IDENTICAL ORIGIN BUT DIFFERENT SEROLOGY

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THE cases here recorded are of considerable interest from both clinical and bacteriological aspects, and demonstrate the importance of the application of the newer knowledge relating to the agglutination tests in the routine diagnosis of sporadic and epidemic cases of enterica.

THE FIRST CASE

A. B., a girl aged 7, was admitted to the Birkenhead infectious diseases hospital on August 18th, 1932, and was then diagnosed on clinical grounds as a case of enteric fever. There was a typical history of onset, the child being admitted on the seventh day of illness, and presenting then all the classical features of enteric fever. The child had partaken of cockles, imperfectly cooked, on one occasion about a fortnight before the onset of illness. On admission the white blood count was 2500 per c.mm., and the patient was gravely ill. The further history of the case was as follows:—

Second week of illness (first week in hospital).—Still very ill; temperature remained high with little daily variation; diarrhœa continued; rash still appearing in crops; diazo-reaction positive; widespread bronchitis.

Third week.—Temperature remained high; marked myocarditis, with blood pressure falling steadily; breathing very laboured, with intense congestion of lower half of right lung.

Fourth week.—Temperature remained high; general condition very poor; marked subsultus tendinum and carphology; continuously delirious, and doubly incontinent.

Fifth week.—Temperature falling; slight improvement in general condition; lungs clearing, but myocarditis still very marked; extraordinarily profuse crop of furuncles, with superficial and deep abscesses, and gangrenous bedsores on trunk and limbs (*Staphylococcus aureus* isolated in pure culture); white blood count rose to 8000 per c.mm.

Sixth week.—Temperature oscillating wildly; general condition very poor; skin sepsis continued; white blood count rose to 12,500 per c.mm. (of which polymorphonuclears formed only 55 per cent.).

Seventh week.—Temperature falling; general condition improved; sepsis less marked; mentally clearer; white blood count rose to 16,000 per c.mm.

Eighth week.—Temperature settling; sepsis clearing.

From the eighth week onwards the child made an uneventful recovery, being discharged from hospital in good condition on Nov. 30th, 1932. (J. M. D.)

BACTERIOLOGICAL FINDINGS

On admission the blood culture gave a growth of *Bacterium typhosum*, but the fæces and urine were negative. (J. M. R.) This strain was motile and showed granular agglutination with the patient's own serum and the Standards Laboratory's "O" typhoid serum (titre 1 in 250) at dilutions of 1 in 20. It showed "H" or large floccule agglutination with the serum of Case 2 at a dilution of 1 in 160, and with the Standards Laboratory's "H" typhoid serum (titre 1 in 250) at a dilution of 1 in 320. (J. D. A. G.)

The Widal reaction, using the Standards Laboratory's suspensions of *Bact. typhosum* "H," *Bact. paratyphosum* A and *Bact. paratyphosum* B, was negative at dilutions of 1 in 20 and over, and remained negative when repeated weekly with these suspensions for the next 12 weeks. No tests with "O" suspensions were done up to this point. *Bact. typhosum* was isolated from the urine on the twelfth week of the disease. (J. M. R.)

The serum obtained at the twelfth week (Nov. 3rd) agglutinated *Bact. typhosum* "O" (Standards Laboratory) suspension at a titre of 1 in 40, and at the fourteenth week (Nov. 17th) gave granular agglutination at the following titres. (J. D. A. G. and confirmed by J. M. R.)

Bact. typhosum—

"H" (Standards Laboratory)	positive in	1 in 10
Weil and Felix H.901	,, ,,	1 in 10
"O" (Standards Laboratory)	,, ,,	1 in 40
Felix and Olitzki O.901	,, ,,	1 in 40
Isolated from the blood of this case by J. M. R.	,, ,,	1 in 20

The reduction factor for the Standards Laboratory's "O" suspension used in each case was 8, so that the reduced titre for the "O" suspension was 5.

THE SECOND CASE

B. B., aged 34, the aunt of A. B., was admitted a few days after A. B. with a history of having partaken of cockles on one occasion in company with her. At the time of admission she had been vaguely ill for 12 days, and on admission showed, though to a less marked extent than A. B., the typical features of enteric fever. The white blood count was 3600 per c.mm. (polymorphonuclears 48 per cent.). In this case the illness ran a milder, although fairly severe course. The temperature subsided by the end of the fourth week, but later there were a few minor complications, a mild periostitis developing in one rib and both tibiæ. All three cleared up spontaneously on conservative treatment. Convalescence was slow, but the patient ultimately made a good recovery, and was discharged from hospital on Nov. 16th, 1932. (J. M. D.)

BACTERIOLOGICAL FINDINGS

On admission the blood culture was sterile, but the Widal reaction with the Standards Laboratory's suspension of *Bact. typhosum* "H" was positive at 1 in 200. No test with an "O" suspension was made. (J. M. R.)

The serum obtained at the fourteenth week (Nov. 17th) gave the following titres. (J. D. A. G. and confirmed by J. M. R.)

Bact. typhosum—

"H" (Standards Laboratory)	positive at	1 in 320	(floccules).
Weil and Felix H.901	,, ,,	1 in 320	,,
"O" (Standards Laboratory)	,, ,,	1 in 80	(granules).
Felix and Olitzki O.901	,, ,,	1 in 80	,,
Isolated (by J. M. R.) from blood of Case 1	,, ,,	1 in 80	(floccules).

The reduction factors for the Standards Laboratory's "H" and "O" suspensions were 11 and 8 respectively, giving reduced titres of approximately 30 and 7 for the "H" and "O" suspensions. The fæces and urine consistently gave negative results even on repeated examinations. (J. M. R. and J. D. A. G.)

DISCUSSION

In the first case it must be admitted that the reduced titre of 5 for the "O" suspension was not in itself diagnostic, a reduced titre of 10 being required for certainty. It was, however, in this case strong confirmation of the diagnosis made on clinical grounds. Apart from the confirmatory value of this sub-diagnostic titre, especial interest attaches to the fact that the cases, while differing so widely in their serology, were infected from apparently one and the same source—namely, the partaking of cockles about the beginning of August, 1932. In the second case,

the "H" reduced titre of 30 was definitely diagnostic, and the "O" reduced titre of 7, though on the borderline, was practically diagnostic.

The isolation of a motile *Bact. typhosum* from the first patient, who showed "O" agglutination alone at dilutions of over 1 in 10, is worthy of note. It appears probable that the organism changed from a non-motile to a motile form very soon after its removal from the body. On the other hand, it may be that not all the organisms in the patient in such a case are in the "O" form—i.e., flagella may have already developed without having had time to give rise to any considerable quantity of "H" agglutinins. This latter explanation seems unlikely in view of the repeated failure of the serum of the first patient to agglutinate "H" suspensions.

Thanks are due to Prof. J. M. Beattie and to Dr. A. D. Gardner for helpful criticism, and to Dr. D. Morley Mathieson, medical officer of health for Birkenhead, for permission to publish the cases.

A CASE OF UNDESCENDED OVARY

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There are very few cases on record in which failure of descent of the ovary into the pelvis has led to clinical symptoms; in fact, I have found only two such cases, and in one of these it is doubtful if the anatomical position of the ovary was responsible for or influenced the clinical aspect. It seems, therefore, that a further case is worth recording.

The descent of the ovary may be arrested in any part of its course between the region of the kidney and its normal position in the true pelvis; when it is found high up in the region of the kidney there are to be found other abnormalities of development, such as spina bifida,[1 2] or defects in the development of the colon.[3 4] Abnormalities in other parts of the female genital tract have also been described in connexion with this condition.[5]

The cases in which the abnormality has been connected with definite symptoms are as follows:—

Case 1.[4]—Aged 15; menstruation had started three months previously and had so far been regular. She had had pain in the right side for about three months, and this had been more severe at the periods. At an operation the ovaries were found to be in the iliac fossæ, the Fallopian tubes were long and reached the ovaries, while these latter organs were apparently normal, except that they were rather long (the length of the right one is given as being about two and a half inches). The uterus was abnormally small, and the colon was not fully developed, for the cæcum was found to lie where the middle of the transverse colon should be.

Case 2.[6]—Aged 37; menstruation normal, two children, ten and nine years ago. Symptoms of seven years' duration consisted of attacks of pain and fever, followed by a flow of pus from the vagina, which gave her relief; the attacks had become more frequent, and finally almost continuous. She had a mass in the right iliac fossa, which at operation was found to consist of a pyosalpinx and ovary. The left ovary was in its normal position in the pelvis. It seems that the symptoms in this case were entirely due to the infection of the Fallopian tube, and the failure of descent of the ovary into the pelvis was merely incidental.

Case 3.—In the case now described for the first time the patient was a girl of 14. She had never menstruated, and had been in good health till the onset of the present attack. She complained of fairly severe abdominal pain of 48 hours' duration, which had been localised to the right iliac fossa from the outset. She vomited once soon after the onset of the pain.

Her temperature was 99° F. and her pulse-rate 98. There was a small firm lump to be felt in the right iliac fossa, about one inch in diameter, and relatively fixed to the posterior wall of the iliac fossa; it was tender, but there was no rigidity of the abdominal wall over it. An operation was performed under ether anæsthesia; a muscle-splitting incision was made over the swelling, which was thought to be an appendix abscess. When the peritoneum was opened, the cæcum and appendix were found to be normal; the mass was retroperitoneal, behind the cæcum, and when the peritoneum along the outer border of the cæcum had been incised the mass was found to consist, in its upper part, of blood clot, while the lower part was solid. When the blood clot was removed there was an oval tumour, two inches long and about three-quarters of an inch in width, with its long axis lying vertically; to its lower pole was attached a fibrous band, which ran downwards over the pelvic brim, while blood-vessels entered it at its inner border near the upper pole.

The right Fallopian tube was lying in its normal position in the pelvis, and the uterus felt to be normal in size for a girl of her age. The left ovary and tube could not be palpated through the incision. The swelling was removed, and suspicions that it was an undescended ovary were later confirmed on microscopical examination. The wound was closed after the appendix had also been removed, and the patient made a good recovery.

The microscopical examination of the tumour showed the appearance of a well-developed ovary, which was normal for a girl of this age; the section passed through two Graafian follicles and showed also a large number of primitive ova.

Four months after the operation the patient developed pain in the left iliac fossa, which she described as being similar to that which she had felt on the right side before the operation. This pain lasted for about three months, was never very severe, and had no monthly periodicity. Apart from this, the patient has now remained in good health for the two years since the operation. She has not yet menstruated, though she is now 16 years of age, but she has a normal growth of pubic hair, and her other secondary sexual characteristics are normally developed.

There is no doubt that it was the malposition of the organ which in this case was largely responsible for the symptoms; the fact that the organ was entirely retro-peritoneal meant that there was no means of escape for any hæmorrhage associated with the rupture of a Graafian follicle, so that when this occurrence had taken place the blood had clotted round the organ, and had caused the palpable mass in the right iliac fossa.

It is surprising that more cases in which this malformation has given rise to symptoms have not been recorded. The reason probably is that in the majority of cases in which the ovary does not reach the pelvis the organ is rudimentary and never produces Graafian follicles; it is only when the ovary is in such a position that ova, if formed and released by the rupture of a Graafian follicle, cannot escape freely into the peritoneal cavity, with any hæmorrhage that may take place at the same time, that the condition gives rise to symptoms.

I wish to thank Dr. S. C. Dyke, pathologist to the Royal Hospital, Wolverhampton, for his microscopical examination and report on the ovary removed; also Dr. W. Goldie, who sent the patient to hospital and has been most helpful in following the case since the operation.

REFERENCES

1. Bland-Sutton, J.: Brit. Gynæcol. Jour., 1887–88, iii., 372.
2. Kermauner: In Halban and Seitz's Biologie und Pathologie des Weibes, Berlin, 1929, vol. iii., p. 306.
3. Ibid.
4. Pidcock, B. H.: Brit. Med. Jour., 1930, ii., 863.
5. Franque: Quoted in Biologie und Pathologie des Weibes (ref. 2).
6. Harris, M. L.: Amer. Gyn. and Obst. Jour., 1896, viii., 45.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF MEDICINE

AT a meeting of this section, held on Oct. 23rd, the chair was taken by Sir FARQUHAR BUZZARD, the president.

Dr. W. STOBIE opened a discussion on the

Early Diagnosis of Pulmonary Tuberculosis

The early diagnosis in adults, he said, was hampered by lack of a satisfactory conception of the pathogenesis. Even now there was sharp division of opinion as to the portal of entry and the route taken by the organisms to the lung. He summarised the reasons for failure to detect early cases as: lack of accepted facts; inadequate experience of medical students, largely due to dissociation of tuberculosis work from that of the general hospital; possibly some change in the type of disease; economic difficulties of the patient, so that advice was sought late; and the lack of institutional accommodation. No one symptom was pathognomonic; any of the classical symptoms might be found in other disorders. Less often stressed among symptoms were aphonia, tachycardia with fever, pain in the shoulder, and anorexia. Aphonia was too often dismissed as hysterical in young women. Anorexia was a frequent early symptom. On the other hand, a premenstrual rise of temperature was not diagnostic, nor did absence of fever during the monthly period rule out the disease. The urge of patients to minimise their symptoms must not be forgotten. Hyperthyroidism was perhaps the best example of a systemic disease resembling tuberculosis. No one sign was diagnostic except the discovery of the bacillus in the sputum. The slightest degree of spinal curvature and occupational factors would modify the expansion of one side of the chest, but an important sign was local "lagging" of muscle resistance. Percussion should be light; the affected side might yield a slightly tympanitic note. A feeling of resistance, sometimes associated with tenderness, was a valuable sign. Bands of resonance were of doubtful usefulness in diagnosis. Neither percussion nor auscultation would help with deep-seated lesions, but long deep breaths, followed by cough, should be listened to. The first sign in auscultation was weakening of the breath sounds, but this must not be regarded as pathological unless associated with another sign, such as persistent crepitation, best heard below the clavicle in the second interspace and just internal to the angle of the scapula. The axillæ must also be investigated.

It was possible that the tubercle bacillus might lose its acid-fast properties at certain stages. The blood picture of tuberculosis showed nothing pathognomonic. The focal reaction after the injection of tuberculin was useful, and its dangers had been exaggerated. Recent work suggested that a precipitin test might prove valuable in diagnosis.

X rays should be regarded as part and parcel of the clinical examination once suspicion had arisen, and both clinician and radiologist should be present at the screening. A control series was essential, or many lusty undergraduates would be in danger of prolonged sanatorium treatment on X ray pictures of the chest. The screen gave useful information, but diagnosis should await the film. It was doubtful whether diagnosis could be made earlier by radiography than by other methods. How far persons showing small densities at the apices were ill and in need of treatment was doubtful. Nevertheless, no diagnosis of tuberculosis should be made without the aid of X rays. All methods of proved value, traditional and modern, should be used.

Dr. PETER KERLEY said that the function of the radiologist was not to make a final diagnosis but to correlate accurately his findings with those of the clinician. The commonest early radiological appearance was a round opacity in the infra-clavicular region, sharply- or ill-defined, about the size of a shilling, and equal in density to the shadow of the inferior vena cava. The sign was more common on the right side than on the left, and sometimes the foci were multiple. Only when a central translucent area appeared did the sputum become positive. Healing by calcification was rare. Differentiation of a single focus from lung abscess and of multiple foci from metastases might be impossible. The second most common lesion was a triangular opacity, the apex pointing to the hilum. Calcification again was rare. Thirdly, there might be a collection of small spots, usually arranged deeply in the centre of an upper lobe, and in a ring shape which differentiated them from vascular shadows. Fourthly, there might be a collection of from four to ten spots in the apex; this sign was very definite but not common. The lesions tended to heal, and the usual symptoms were malaise and cough; caseation was uncommon.

The problem of correlation was more difficult in children, because glandular tuberculosis was always present as well, and often the only symptom was malaise. The primary lung lesion was usually surrounded by a non-specific lobar infiltration, through which a round dense opacity might occasionally be seen. The round opacity alone was rare in children and, when seen, was usually in the right lower lobe. Glandular tuberculosis always produced some pulmonary reaction in the neighbourhood, seen as an ill-defined opacity radiating from the hilum, never associated with complete lobar infiltration. In hilitis there was inflammation of the glands and hilar connective tissue without much enlargement; the condition was more often non-tuberculous than tuberculous. An intradermal tuberculin test gave a sharp focal reaction in the lungs, and the opacity cleared up in a few days; this distinguished the tuberculous type.

Dr. J. A. STRUTHERS said that the problems arising in a dispensary did not differ from those met elsewhere. The medical profession could not be blamed for failing to diagnose a disease in patients who did not consult them. The problems of tuberculosis were as much economic and social as they were medical. The family history was important. Some cases of chronic bronchitis and emphysema suddenly began to show tubercle bacilli in the sputum; gastric ulcer and tuberculosis also seemed to coexist with greater frequency than would be expected, nor were pulmonary tuberculosis and mitral stenosis incompatible. Radiological and clinical findings must be correlated. Every effort should be made to keep the tuberculosis clinic in close touch with general medicine. Diagnosis should not be precipitated or hurried; if a case could not be settled in six weeks, little harm would be done by delay. On the whole, cases were seen at the dispensary earlier than at the general hospital. Suspicion should be aroused by any contact who was febrile without obvious cause. The onset was apt to be relatively

sudden. When diagnosis was in doubt and hospital accommodation was required, the patient should be kept apart from others, as serious mental damage might be done by association with advanced cases.

Dr. R. R. TRAIL remarked that the history of phthisis was the history of symptoms; moderately advanced cases might have a history of weeks only. Important symptoms were indigestion and cough lasting more than a month. Veins in the throat were still too often blamed for hæmoptysis, and the warning of pleurisy disregarded. A patient should be advised to take a short educational stay in a sanatorium after either of these conditions. Fistula in ano was strong presumptive evidence of phthisis, and amenorrhœa was often a sign. Ether anæsthesia often woke up a lung lesion, whereas gas had no ill-effects. Rest was the great diagnostic criterion. The patient was put to bed for three-hourly temperature readings; if there was no fever an exercise test should be made. After twenty minutes' walk the temperature would rise, but the fall would be slow in the tuberculous, and if a reading of 99° were found after half an hour the radiologist should be called in. Many non-tuberculous patients had been labelled tuberculous by radiology. Physical signs and symptoms were of much less importance in early diagnosis than exercise and rest. Lack of movement was the most valuable sign; eyes and hands were more useful than ears in diagnosis.

DISCUSSION

Dr. CECIL BULL observed that the clinical symptoms and the radiological signs seemed to be of the greatest value in diagnosis. He had found radiological signs in a different order from Dr. Kerley: scattered lesions were more common than circular or triangular ones. Pathological evidence should be correlated with clinical and radiological.

Dr. LEONARD FINDLAY said that tuberculosis was not the same everywhere and at all ages; therefore the same generalisations could not be applied to all cases. In the child the disease was practically never chronic. Clinical signs exceeded radiological in pneumonia, but the reverse was almost always the case in tuberculosis. It was not fair to make the diagnosis on a single film; the case should be watched radiologically over a period. Pulmonary tuberculosis in children was acute and usually soon fatal; one type showed a very diffuse caseating broncho-pneumonia—limited to infants—the other type was part of a generalised tuberculosis in older children. If the adult standards of diagnosis were applied to the child many non-tuberculous children would be labelled phthisical.

Dr. W. E. LLOYD showed a series of slides illustrating the importance of radiology in all cases of hæmoptysis. The drainage from the focus could usually be seen clearly. Clinical examination had been very indefinite in his series and radiology had been essential for the diagnosis.

Dr. R. COOTE spoke of 103 cases he had investigated, 5 being early and 84 advanced or moderately advanced. The histories showed that all the familiar symptoms had been present. The disease itself had made difficulties in diagnosis, and medical men had shown a lack of appreciation of the significance of symptoms. There was a snare in the stethoscope; what the ear didn't hear the heart didn't grieve at. Students ought to be taught to regard the stethoscope as an explosive weapon. The time had come for a commission on clinical signs, a clearing-out of the old junk, and retention only of those which were based on clinical pathology.

Dr. L. S. T. BURRELL said that every patient who came up for diagnosis had something wrong with him and ought to be made well. The gap between the negative and positive cases would be eliminated, and many later cases saved if every patient was treated. There was a danger in stressing too much the importance of early diagnosis. Contacts were of great importance at any age. If all adult tuberculosis was the development of a disease contracted in childhood, it was hard to see why the adult should be susceptible to his own tubercle bacilli and immune to those of others with whom he came into contact.

Dr. STOBIE, in reply, said the tuberculosis officer should be a member of the honorary staff of a hospital. He agreed with Dr. Findlay about the difference between children and adults, but had known of several children who had recovered. It was far better to put doubtful patients under a strict régime than to let them go untreated.

SECTION OF NEUROLOGY

AT the opening meeting of this section on Oct. 19th Dr. S. A. KINNIER WILSON gave his presidential address on

Megalencephaly

There appears, he said, to be no pronounced exception to the general rule that any somatic tissue or organ may depart from its normal standard in the direction of either under- or overgrowth. The brain, as one of the organs of the human frame, is likewise susceptible to hypo- or hyperplasia. This is an old observation in medicine, for fairly evident reasons; a small head or a big head undoubtedly engages attention if its deviation from the norm is well marked. Current nomenclature in this connexion is rather unsatisfactory; **microcephaly** is used where micrencephaly is clearly preferable, and should a term be wanted for the former, considered as a smallness of skull, then microcrania should be employed. As regards the converse anomaly, however, the correspondence is not quite the same. From a large head a large brain cannot immediately be inferred, seeing that the principal cause of cranial enlargement is hydrocephalus, and the hydrocephalic brain is distended but in no sense hypertrophied.

On theoretical grounds "big-brainedness" is a possible genetic anomaly, but the possessor of an unusually big and heavy brain whose functions are normal cannot be considered pathological; he might be remarkable for outstanding intellectual ability (though this is by no means always the case). Increase of bulk accompanied by superlative physiological activity is a departure from the norm, yet not a morbid state. Scattered sparsely through the literature, however, will be found records of cerebral hyperplasia accompanied by some degree of mental retardation or of idiocy, by epilepsy, or by other abnormalities of function. The brain as a whole has undergone harmonious and well-proportioned enlargement in its general naked-eye dimensions; it fills the cranium "to capacity," its surface is covered with plump convolutions, and its weight considerably exceeds the average for age and sex concerned. The brain *looks* normal, but yet is the seat of some dynamic defect. For such an anomaly of growth the term "megalencephaly" was originally suggested by Morley Fletcher in 1900. Long before then, and occasionally since, brain "hypertrophy" or "hyperplasia" has sometimes been employed to denote the same condition, but neither perhaps quite conveys the idea of *pathological* overgrowth implicit in the word megalencephaly.

Two cases, said Dr. Wilson, belonging to the class have come under observation. One was that of

a little boy of 2½ years, who had always been backward and whose head from his earliest months had been considered unduly large. He died from a sudden series of epileptic fits, and at autopsy the maximum circumference of the skull was found to be 55 cm. (normal, 47 cm.). The brain weighed no less than 1644 g. (average, 1010 g.). The gyri were full, plump, and rounded, the cortex possibly slightly thicker than normal. No disproportion between grey and white matter could be discovered. Histological examination showed that large numbers of the pyramidal cells of the third and fifth cortical layers were curiously elongated, stained deeply, and were devoid of normal Nissl substance. Their cytoplasm refused to differentiate by ordinary staining technique. In addition, the nuclei were also oval or elongated, sometimes almost triangular, stained deeply, and no nuclear structure could be made out.

The second case was that of a little boy of 3 years, who also had been backward from birth, but who had not suffered from convulsions. Like the first, his case had been confidently diagnosed during life as one of internal hydrocephalus. Nevertheless, at autopsy, the brain was found to be harmoniously hypertrophied, with no sign of hydrocephalus; it weighed 1502 g. (normal, 1080 g.). The circumference of the head was 51·2 cm. (normal, 47 cm.). The pathological examination of the cerebral tissues in this second case has not yet been completed.

In both cases the condition appeared to be one of pure megalencephaly, in the sense of increase of total quantity of neural substance, made up of increase in individual elements, grossly out of proportion to the age of the infant, but coupled with evident anomalies of individual cell-constitution. No areas of gliosis were found in either; the hyperplasia involved both parenchyma and interstitial substance equally.

The ætiology and pathogenesis of megalencephaly are, Dr. Wilson continued, very obscure, but consideration of certain data in connexion with abnormal somatic growth may throw some light on them. It is well recognised that in the case of acromegaly virtually all the tissues and organs of the body are liable to overgrow; splanchomegaly, for instance, is far from rare. But as a general rule the brain itself does not share in the hypertrophy, and this is a fact of much significance. Again, when the body suffers from wasting diseases, e.g., the famine or hunger œdema of the war period, although all the viscera undergo marked reduction in size and weight this does not apply to the brain to anything like a proportional extent. These and certain other considerations seem to indicate that in some way or other the brain (and central nervous system generally) is independent of the hypertrophying hormones of acromegalic dyspituitarism, on the one hand, and of the injurious effects of cachexia on the other. The brain might thus be conjectured to have some means of protection of its own. Interesting evidence recently adduced by Prof. G. H. Parker of Harvard favours the theory that nervous tissue has secretory as well as conducting properties, and that the problem of trophicity is closely bound up with this secretory function. Thus it might be imagined that the brain has within itself its own hormone-producing system, and that this system is responsible for the development and maintenance of trophicity. In a sense, accordingly, the brain might be regarded as a gland.

Were such a hypothesis to prove worthy of credence, its application to the question of megalencephaly might not be too far-fetched a conception. It would serve to explain with some plausibility the phenomena of that genetic abnormality, and at the same time might be invoked to account for the independence of the brain in the presence of circulating hormones which do unquestionably exercise a hypertrophying influence on other tissues and organs. In the case of acromegaly, the body overgrows but not the brain; in the case of megalencephaly, the brain overgrows but not the body.

PADDINGTON MEDICAL SOCIETY

Dr. W. G. BENDLE, the president, took the chair at a meeting of this society held at the Great Western Royal Hotel on Oct. 10th, when Dr. G. H. ORIEL opened a discussion on

Asthma

It was necessary, he said, to consider the constitutional factor and the precipitating stimuli. Given an asthmatic tendency the stimulus might be of almost any form, physical or psychological. There was evidence of an allergic causation—hypersensitiveness to any foreign protein—some 50 per cent. of asthmatics giving positive results to skin tests, especially extracts of house-dust and feathers. An hereditary tendency was frequently observed. It was difficult to establish whether the changes in the allergic state were primary or secondary. Dr. Izod Bennett had shown that if a healthy subject were hypnotised and fear were suggested, the hydrochloric acid content of the gastric juice would be lowered, and it had been stated that the majority of asthmatic children had hypochlorhydria. On the other hand, asthmatic children were often what their mothers called "sensitive," and asthmatic adults often had normal gastric acidity. Most allergic subjects, especially children, showed a tendency to low blood-sugar, and during the attack the amino-acid content was usually higher than normal. The urine showed an increase in ammonia-combined acid, diminution in the chlorate excretion, a marked tendency to a deposit of urates, and an increase in the output of creatinine. This picture could not be entirely explained by the effect on the body of mental conflict, but could justly be considered secondary to an underlying condition.

A non-heat coagulable substance could be isolated from the urine during an attack, and would give positive skin tests on allergic but not on normal subjects. The excretion of this proteose, a protein breakdown product, was possibly also secondary. Prof. Langdon Brown had suggested that it might be due to a deficiency in histaminase, but present-day methods could not test this theory. Normal serum, however, had been found to possess the power of breaking down peptones and proteose into simpler substances, such as the amino-acids, and research was being conducted into the question of whether asthmatic serum had the same power. Dr. Oriel said that his impression so far was that it had not, and this deficiency would account for the appearance of proteose in the urine. Treatment was by elimination of foreign proteins, specific or unspecific desensitisation, the administration of hydrochloric acid and glucose, and psychotherapy.

Prof. MILLAIS CULPIN pointed out that his generation of medical students had been brought up to a materialistic outlook. Nowadays far less insistence was, he said, laid on physical treatment of physical disorders. Asthma was one of many conditions which might have a mental foundation. The Adlerians

held that these patients reacted in this particular way because of an organ inferiority. Without fully accepting this view, he testified to a considerable temperamental difference between the asthmatic and the rheumatic child: in a roomful of rheumatics if one cried all would; in a roomful of asthmatics if one cried the others would merely want to know what was the matter with him. The jovial fat extravert did not often suffer from asthma. The physical symptoms could be replaced by an anxiety or obsessional state, though the conditions might be combined. Asthma was often an expression of a phobia, and was sometimes permanently cured when the patient was helped to analyse out a satisfactory reason. The innumerable material stimuli that could produce an attack made asthma look like a kind of biochemical Puck. It might be the great task of medicine to link up the emotional and the biochemical points of view; on the other hand, it might be wrong to draw a distinction between mind and body at all. An attempt towards this harmony was Dr. Culpin's theory that an original emotional stimulus evoked a reflex response by which a number of physiological reactions became abnormally labile. Some of the other chemical reactions of the body might also be rendered labile, and if they took place at the time of the emotional stimulus a reflex might be conditioned and the chemical stimulus could work thereafter in the absence of the emotional stimulus. The latter was the primary cause of the trouble and the conditioning of the reflex might be more or less accidental. The biochemical Puck was therefore identified, not as a mysterious and mischievous being, but as the human mind itself. Feather-sensitiveness might in some cases be due to the juvenile association of the smell of feathers with the witnessing of sexual intercourse between the parents.

Dr. J. FREEMAN welcomed the distinction between the rheumatic and the asthmatic child, for it disposed of the foolish theory that rheumatism was an allergic manifestation. Skin reactions varied according to the disposition of the patient at the time. His impression was that asthmatic attacks were due rather to acute than to chronic psychological conditions. There was no one prime cause. He reproached the psychotherapist for forbidding the general physician to treat asthma, and at the same time offering only a remedy which was prohibitively costly in time and money.

Dr. A. BALDIE spoke of the necessity of allowing the patient to find his own solution. If a certain explanation had tremendous significance for the patient, then it was equally significant for the physician. The Adlerian method was the only psychological one suitable to the circumstances of the general practitioner.

Dr. J. COHEN related three cases: one of intractable asthma in an Irishwoman, which was mitigated by various psychological influences; a second of a district nurse who suffered attacks only in two badly lighted villages; and a third in a business man who had to travel, and who suffered from asthma when his wife was not accompanying him.

Dr. A. RIDGEWAY told how a number of Malabar clerks had been cured by their appointment to work in a power-house containing lightning arresters, which were constantly busy and liberated ozone. The patients had, however, remained free from asthma when these arresters were moved outside the building without their knowledge.

Dr. G. DE SWIETOCHOWSKI observed that many male patients seemed to inherit asthma from their mothers, while females inherited it from their fathers. The realisation of this fact sometimes had a beneficial effect. Asthma traceable to the witnessing of parental coitus must, he said, depend not only on the association with feathers, but also on a desire to imitate, or on envy or fear.

Dr. S. CROWN complained that the information the speakers had given did not appreciably help the general practitioner. He asked whether a medical man could promise a chronic asthmatic that if he went to a psychologist at the cost of a certain amount of time and money he could really expect to be benefited. Adrenaline remained, he declared, the only reliable palliative; ephedrine had not come up to expectation.

Dr. H. HODGE stressed phobia as the essence of asthma. He said that ephedrine and adrenaline were effective because the fear reaction was closely allied to the function of the adrenals. Pituitary extract and adrenaline had in one case made an attack worse, and the patient had only been calmed by the dangerous method of atropine and morphine. He never used morphine for a patient under 50. Patients might improve in hospital by getting rid of the source of their fear.

In reply, Dr. ORIEL said that so far from asthma being incurable, 70 per cent. of cases could be very much relieved.—Dr. CULPIN proposed, instead of "cause," the word "constellation." Some general practitioners, he said, were not fitted to treat cases on psychological lines, but others were highly gifted. Nevertheless, the general practitioner should avoid anything in the nature of psycho-analysis or he would get into a tangle. Adler's was, he said, a naked-eye pathology only, but his only complaint against the school was its insistence that its own doctrine represented the whole story. It helped the general practitioner more than a perusal of the whole of Freud's works. Some patients were in such a psychological state that they could not go far without a mother representative; hence the immunity from asthma in the wife's company. An association with parental coitus would be complicated by all kinds of very deep emotional factors.

The PRESIDENT remarked that asthmatic patients by no means always recovered in hospital.

LIVERPOOL MEDICAL INSTITUTION

AT a meeting of this institution on Oct. 12th, with Dr. H. R. HURTER, the president, in the chair, a paper on

Carcinoma of the Scrotum

was read by Mr. J. COSBIE ROSS. The condition, he said, though particularly amenable to surgical interference, was largely neglected in the text-books. The four cases he described were none of them associated with mule-spinning; the predisposing cause was chronic irritation by the clothes, stiffened by oil, dirt, or rigidity of the material. Two out of five scrotal tumours on microscopical section proved to be basal-celled carcinoma undergoing squamous-celled evolution, so that in a certain proportion of cases the sequence appeared to be: rodent ulcer, transitional tumour, epithelioma. This view was supported clinically by a case in which an epithelioma and a transitional tumour were present together on either side of the media raphé. Treatment, both of

primary growth and of inguinal glands, should be by surgical excision rather than by radiotherapy, which had proved disappointing. It was unnecessary, however, to remove both growth and glands en bloc, for in this region cancerous spread was by lymphatic embolism and not by permeation. Excision of the fatty glandular mass in the groin should be wide, and include glands situated just internal to the anterior superior iliac spine, since the lymphatic trunks draining the anterior aspect of the scrotum near the raphé ran directly to these glands. Mr. Ross thought it advisable to deal with the glands in all cases of transitional tumour.

In the discussion which followed, Prof. LEYLAND ROBINSON drew attention to the points of resemblance between scrotal tumours and neoplasms of the vulva. The scrotum and vulva were homologous structures and their lymphatic drainage systems were alike; in both conditions excision gave better results than radiotherapy, although it was difficult to obtain primary union of the flaps. It had been suggested that irritation by mineral oils played an important part in the production of vulval, as in scrotal, cancer; but the clinical evidence of this had not been sufficiently tested by control cases taken from areas in which mineral oils were not in common use. In this respect, Mr. Ross's cases were especially interesting, for none of his patients had been submitted to the irritation of soot or mineral oil.

Dr. T. B. DAVIE spoke of the observation of Ewing and others that the malignant growths of the scrotum were almost always poorly differentiated epitheliomas and rarely showed the multiple cell-nests of a well-differentiated or acanthomatous epithelioma. He commented on the occurrence of two rodent ulcers among the five tumours described by Mr. Ross, and suggested that their appearance at this point was a reminder of the fact that the median raphé of the scrotum was a line of embryological junction of epithelium.

Diuretics and Œdema

Dr. I. HARRIS, Mr. R. SHUTT, and Dr. E. L. RUBIN contributed a paper on the action of some diuretics in cardiac œdema. It was found that Salyrgan improved diuresis as well as increasing salt excretion, but it might do one or the other; in either case the œdema diminished. Blood chloride always fell under salyrgan; hæmoglobin was also reduced, proving that there was a condition of hydræmia, and this condition was found as long as 24 hours after the drug's administration. The bases, potassium, sodium, magnesium, and calcium, were diminished four hours after the injection, but were normal after 24 hours. The urine contained an enormous amount of base, particularly potassium and sodium, after administration of salyrgan, and in some cases a big increase was still noticeable after three or four days. The efficiency of salyrgan was improved by giving ammonium chloride and sometimes by giving a salt-free diet. Salyrgan had a double action; it was a tissue diuretic, taking fluid from the tissues and bringing it into the circulation, from there to be excreted to the kidney, and it also acted on the kidney—otherwise the improved excretion of urine for concentrated salt could not be explained. Ammonium chloride had a similar action. By producing acidosis, it brought into action a mechanism to counteract the abnormal acidity; this mechanism set free base, particularly potassium and sodium; and this was excreted by the kidney, taking water with it. The blood chlorides, however, were always increased after ammonium chloride, and hæmoglobin increased too. Blood bases were diminished when fluid was restricted and were normal when fluid was excessive. The drug acted better under a régime of restricted fluid.

REVIEWS AND NOTICES OF BOOKS

Bentley and Driver's Text-book of Pharmaceutical Chemistry

Second edition. Revised by JOHN EDMUND DRIVER, Ph.D., M.Sc., A.I.C., Lecturer on Chemistry in the University College of Nottingham. London: Humphrey Milford, Oxford University Press. 1933. Pp. 538. 16*s*.

IT is claimed for this book that it "now meets the requirements of those studying for any of the examinations in pharmaceutical chemistry of the pharmaceutical societies, boards, or universities of the British Empire." This may well be believed. It is even likely that the book more than meets these requirements; it would certainly terrify the average pharmacist to be told that he would be examined on its contents.

It is, no doubt, difficult for an author to express individuality in a book written to prepare people for examinations rather than to give them ideas, but as examinations must be negotiated before real work can be begun, it should be said that this is a good book for its purpose. The chemistry needed for the understanding of most substances used in medicine is clearly outlined. The theoretical part is excellent. About one-third of the 70 odd pages devoted to analytical methods is taken up by two chapters by Dr. E. B. R. Prideaux on hydrion concentration—a notable sign of the times. The chart which shows the colour changes, with varying pH, of common indicators, should be used in reading these chapters, although Prideaux does not seem to refer to it. With this exception the illustrations appear mostly to be taken from the catalogues of apparatus sellers. They serve to break up the letterpress and confirm the impression that the author is most at home when he is writing concise and lucid monographs on the chemical nature and relations of the many substances covered by his syllabus.

Practical chemistry is best learnt by working in the laboratory, but what printed instruction is given should be useful. The omission, on p. 35, of the information that it is necessary to filter from silver halide before titrating the excess of silver with thiocyanate, when determining halogens in acid solution by Volhard's method, is likely to lead to an unjust conclusion that this method is lacking in precision; and in describing Mohr's method it would have been well to stress the need for a good excess of chromate to depress the solubility of silver chromate, the separation of which indicates the end-point. The statement that "sodium chloride is not very soluble in hot water" is followed by a table showing that water will dissolve at 100° C. 38 per cent. of its weight without any indication that it is the relative solubility in hot as against cold water that is under discussion. It is not correct that calcium carbonate (p. 153) is less soluble in water than barium sulphate (p. 158). The statement at the bottom of p. 171, "232·7 grammes of HgS is equivalent to Hg," lacks precision. In the description of methods of elementary analysis of organic compounds no indication is given of the precautions necessary in determining the carbon and hydrogen in a compound

which may contain nitrogen, sulphur, or halogens; whilst the soda-lime process of Will and Varrentrap for determination of nitrogen is surely only of historic interest. The iodine absorption of oleic acid is not 80 as stated on p. 322 but 90.

These points affect matters which few students are likely to carry in their memories and to which, having once passed their examinations, they may probably never refer again, but in the interests of accuracy the author should look into them. They detract but little from the useful character of a book which, though it may fail to inspire the ordinary student, must awaken a real interest in chemistry among some of those into whose hands it may fall.

History of Urology

Two volumes. By E. G. BALLENGER, WILLIAM A. FRONTZ, H. G. HAMER, and BRANSFORD LEWIS. Baltimore: Williams and Wilkins Company. 1933. Vol. I., pp. 385. Vol. II., pp. 361. 36s.

THE American Urological Association is responsible for the issue of this work which gives an account of the progress of urology in the United States. Urology is to-day such a well-known department of medicine and has such a vast literature of its own that it is difficult to realise that even 30 years ago it was not regarded as a specialty even in a country of specialisation. According to Bransford Lewis it first appeared in this guise in the form of a small club of medical men interested in the subject, and was founded in a humble wine-house of New York on Feb. 22nd, 1902. Now there are few hospitals in the States in which there does not exist a special genito-urinary department presided over by a surgeon whose entire time is devoted to the specialty. Indeed America in this respect is far in advance of this country where the genito-urinary surgeon is still struggling to emerge from the state of being a respectable venereologist. Although this history will appeal chiefly to American readers it will have interest for others. Starting with a history of the American Urological Association, the first volume then deals with such subjects as anæsthesia in urology, cystoscopy, focal infections, and renal surgery. Vol. II. is devoted to lithiasis, neurosis, prostatic surgery, diagnostic tests, non-surgical methods of treatment, bladder growths, and urology in childhood. In discussing the history of any progress made contributions from sources other than American are generously recognised.

Wilhelm Conrad Röntgen and the Early History of the Roentgen Rays

By OTTO GLASSER, Cleveland Clinic Foundation. London: John Bale, Sons and Danielsson, Ltd. 1933. Pp. 494.

Two years ago, when reviewing a work on Röntgen by Dr. Glasser written in the German language, we expressed the hope that it would be made more accessible to English readers. This volume is more than a translation; it has been entirely rewritten and much new material added.

Röntgen's retiring attitude during his lifetime, says Dr. Glasser, made it difficult to obtain accurate records of his great personality. His biographer has been at infinite pains to overcome this difficulty. He has gleaned his biographical information from many different sources. Moreover, he describes not only the work that Röntgen did, but also the way in which the discovery was received, giving selections from the contemporary press, both scientific and lay, and an account of the contributions of various workers who took up the study of X rays in 1896. The output of scientific papers that year was torrential; a bibliography of no less than 1044 items is appended. Dr. Glasser has brought together everything that he could discover about Röntgen and X rays up to the end of 1896, including many curious comments. It is of rueful interest to see such advertisements reproduced as that of "Sets of Superior X Ray Apparatus as used at the Leeds General Infirmary, Hull Royal Infirmary. . . Complete sets, including 2½ in. coil, £7 10s.," when to-day the cost of one tube is anything from £35 to far over £100! The author has not adhered to the chronological order appropriate to a simple biography. A brief summary of Röntgen's life and work is followed by a translation of the preliminary communication on a new type of rays, and various other interpolations precede the more detailed biographical sections. We could wish that a more orderly course had been followed, since the scheme adopted has led to a good deal of repetition and loss of narrative sequence. The prodigious chapter (80 pages) of personal reminiscences contributed by Margret Boveri, containing long quotations from correspondence, is interesting in itself but holds up the story. The work might have been compressed with advantage; but its value lies in the picture it gives of a quiet, persistent, retiring worker, absorbed in his research, turning out a series of papers that forced him into the front rank of German physics long before his name became, in a day, a household word throughout the world. There has been a tendency to belittle Röntgen's scientific distinction, and to suggest that his discovery was fortuitous. Dr. Glasser finally dispels this view.

The Physiology of Muscular Activity

By EDWARD C. SCHNEIDER, M.P.E., Ph.D., D.Sc., Professor of Biology at Wesleyan University, Middletown, Connecticut. London: W. B. Saunders Co., Ltd. 1933. Pp. 401. 14s.

THE object of some branches of physiological research is obscure to the worker in the more immediately practical branches of medicine, and the investigators are too often not interested in lifting this obscurity. A book like Prof. Schneider's, though it does not stand alone in its chosen field, must go a long way towards resolving such discord. Considerable personal experience and material from some hundreds of original papers on widely different subjects have here been welded into a single whole, and sharpened to the point of practical utility.

There is probably no function of the body which is not modified when physical exercise is taken, and more than half of this book is devoted to an analysis of such modifications, the systems involved being treated in turn. The inter-relation and coördination of these adjustments is then described. Up to this point the book is a valuable supplement to text-books of physiology, breaking down as it does the compartments into which these are divided. The fact that the body functions as a whole, and not as an aggregation of isolated systems, is made evident; moreover, an astonishing amount of physiology is covered and given a directional interest. The later chapters are taken up by a consideration of practical applications, and these will appeal especially to the practitioner. Evidence as to the beneficial effects of regular exercise is given, and a chapter devoted to routine tests for physical fitness. The "fitness" of an individual suffering from no organic lesion is notoriously difficult to assay accurately, but is nowadays of increasing importance, particularly from

the occupational point of view. By using one or other of the systems described and compared in this work, it is possible to express the physical condition of a patient numerically, and therefore to estimate the improvement, or otherwise, accruing after a prescribed course of treatment or exercises. Of further general importance is a chapter on chronic fatigue, or "staleness," and for those especially interested are added descriptions of the effects of heavy work, work at high external temperatures, and exertion at high altitudes.

This is indeed a remarkably complete account of muscular activity. Sufficient explanation of fundamental principles is supplied to make reference to other text-books unnecessary, while a full bibliography gives the opportunity of extending knowledge on more detailed and specialised points. A great deal of evidence is quoted on each aspect of the subject, and, though little attempt is made to weigh it critically, the balance within the chapters is so adjusted that the reader can without difficulty draw his own, and incidentally the author's, conclusions. If Prof. Schneider has erred at all it is through anxiety to leave out nothing relevant; depth has sometimes been sacrificed to breadth. For the student, principles are of paramount importance; for the practitioner, the exact significance of the suggested tests; for the research worker, the assurance that the most important work has been brought to his notice. Considered as a book designed exclusively for any one of these, this monograph is open to criticism, but considered as one planned to give due measure to each, it could hardly be bettered.

Pediatrics

By HENRY DWIGHT CHAPIN, M.A., M.D., Professor Emeritus of Pediatrics, New York Post-Graduate Medical School, Columbia University; and LAWRENCE T. ROYSTER, M.D., Professor of Pediatrics and Head of the Department of Pediatrics, University of Virginia. Seventh edition, revised and rewritten by LAWRENCE T. ROYSTER, M.D. London: Baillière, Tindall and Cox. 1933. Pp. 775. 35*s*.

THE critical reader is likely to be a little disappointed with this edition of Chapin and Royster's text-book. Whilst much of the teaching is unimpeachable, it is cautious rather than inspiring, and little matter is included which could not have been set out equally well 15 years ago. The treatment of the biochemical aspects of the subject is definitely inadequate, and the section on status lymphaticus apparently ignores much recent work and cannot be said to reflect up-to-date medical opinion. The clinical descriptions should for the most part provide the student with an adequate grasp of the subject dealt with, but the illustrations are often so poorly reproduced that their interpretation calls for a degree of faith that is lacking in the modern medical student.

Elementi di Biochimica

con Applicazioni alla Patologia ed alla Diagnostica. Third edition. By PIETRO RONDONI, Direttore dell' Istituto di Patologia generale della R. Università di Milano. Torino: Unione Tipografico-Editrice Torinese. 1933. Pp. 1005. L.80.

THIS work deals with the general elementary principles of biochemistry with particular emphasis on its application to pathological and clinical medicine. The author appears to have made a very careful review of the whole subject and has obviously a good grasp of the European and American literature. The sections dealing with oxidation and reduction in the animal body are quite up to date; those dealing with the sex hormones appear to have been relatively neglected. A practical description is given of the more important methods of biochemical analysis, and for those requiring a text-book of biochemistry in the Italian language the work can be commended.

The Study of Anatomy

Second edition. By S. E. WHITNALL, M.D., B.Ch. Oxf., Robert Reford Professor of Anatomy, McGill University, Montreal. London: Edward Arnold and Co. 1933. Pp. 93. 4*s*.

WE welcome another edition of this excellent little book, and commend it to students in this country. Those who study it will gain a good notion of the objects of their work, and will be shown how to look for the meaning of things. Prof. Whitnall teaches students to get hold of essential values, and teachers of anatomy throughout the world should welcome his coöperation through the medium of this little book.

Anatomy for Artists

Second edition. By EUGENE WOLFF, M.B. Lond., F.R.C.S. Eng., late Lecturer in Anatomy to the Slade School. London: H. K. Lewis and Co., Ltd. 1933. Pp. 194. 12*s*. 6*d*.

THIS is a good book, worthy of a second edition. It does not try to confuse the artist with unnecessary detail, but endeavours to demonstrate the immediate causes of the form which he has to reproduce under varied conditions. The illustrations are ingenious and, we imagine, effective in their purpose. Fig. 75 is not pleasing; we are not particularly concerned with the unorthodox conception of the ligament here shown, but rather with the probability that it might mislead one who tries to "see" the tendons in action with such a band. The chapter on proportions is short but good and clear, and the account of fat distribution is adequate.

Une Étude de Chimiothérapie de la Tuberculose

By Dr. S. ANSBACHER, the Dry Milk Company, Inc. Research Laboratories, Bainbridge, N.Y. Geneva. 1933.

THIS monograph deals purely with the laboratory and experimental side of the chemotherapy of tuberculosis. Dr. Ansbacher endeavours to investigate some of the salts of copper in relation to their therapeutic value. A useful introduction deals with the history of the subject and is followed by two chapters on the methods of analysis of copper salts in the viscera of animals, in the second of which some figures are given for normal controls which will prove of service to other workers. The rest of the monograph is devoted to a series of experiments with different preparations of copper and with controls, and includes tables of results, one of which extends over 16 pages, i.e., almost one-fifth of the book. Dr. Ansbacher concludes that certain compounds of copper, insoluble in water but soluble in oils, offer a hopeful line of investigation in the treatment of tuberculosis, especially when used in low dilutions. A bibliography is appended.

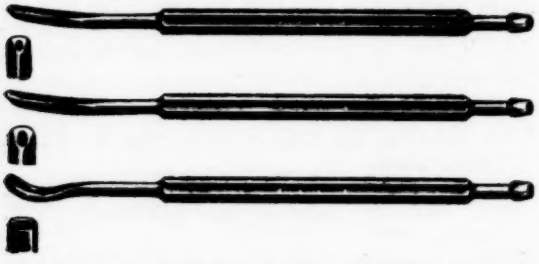
Journal of Pathology and Bacteriology

THE September issue (Vol. XXXVII., No. 2. pp. 169–335) contains the following papers: Species Immunity to Virulent Streptococci, by H. B. Day (London). All virulent streptococci, hæmolytic and non-hæmolytic, produce a common antigen which makes animals resistant with sera which will confer passive immunity.—The Classification of Dysentery-*coli* Bacteriophages: a correlation of the serological classification with certain biochemical tests, by F. M. Burnet (London). Sensitivity to photodynamic action and inactivation by urea are correlated with serological affinity and to some extent with size.—Factors Influencing the Pathogenicity of Bacteria, by F. H. Teale (London). The most interesting observations in this rambling paper refer to the paramount importance of tissue damage in promoting infection.—Acute Pericarditis: a review of 215 autopsies, by L. N. Pyrah and A. B. Pain (Leeds). The most common precedents are pyæmia and septicæmia (especially with osteomyelitis), empyema, and pneumonia.—The Stability of the mitis, intermediate, and gravis Types of *B. diphtheriæ*, by M. H. Christison (Edinburgh). Colony form varies, and is not stable, but gravis strains always ferment starch.—Outbreaks of Infectious Ectromelia in Laboratory and Wild Mice, by C. A. McGaughey and R. Whitehead (Manchester). This ill-named disease is evidently common to those who have eyes to see it.—The Importance of Adequate Reduction of Peptone in the Preparation of Media for the pneumococcus and other organisms, by H. D. Wright (Sydney). An interesting account of how the unsuitability of various current media for the pneumococcus was tracked to its source.—Observations on the Functions of Mucus and the early stages of bacterial invasion of the intestinal mucosa, by H. W. Florey (Sheffield). Particles and bacteria are collected up in the mucus by the wriggling action of the villi.—Renal Lesions in Eclampsia and Nephritis of Pregnancy, by D. Baird and J. S. Dunn (Glasgow). See p. 986.—The Pathology of the Reticular Tissue, illustrated by two cases of reticulosis with splenomegaly, and a case of lymphadenoma, by J. M. Ross (London). This was reviewed in THE LANCET of Oct. 14th (p. 871).—Congenital Cyst of the Œsophagus, by B. S. Cran (Aberdeen).—A case of Multiple Myelomatosis with generalised amyloid-like deposits and unusual renal changes, by M. L. Rosenheim and G. P. Wright (London).—The Discoloration of Heated Blood-agar by Streptococci, by P. D'A. Hart and A. B. Anderson (London). Due to hydrogen peroxide.

NEW INVENTIONS

SUCKING DISSECTORS FOR TONSIL ENUCLEATION

THE instruments here illustrated are triangular on transverse section; in the apex of the triangle runs the suction canal, while the angles at the base form the cutting edges. These angles are about 60°, and when sharpened the edge is exactly the type that enucleates most efficiently. It is easy to cut through the mucous membrane without damaging the tonsil capsule, thus finding the right "layer" without difficulty. At the same time the toughest bands of fibrous tissue can be severed. The canal opens at the very end of the instrument directly adjacent to the cutting edge, and it is large enough to break up



a blood clot when used with an electric suction pump. In spite of this the instruments are not bulky. I use a foot-switch to control the pump during the operation. The smaller of the two instruments is used for making the initial incisions and for freeing the upper pole of the tonsil. The larger one is used after the upper pole is free for sweeping out the remainder of the tonsil. The curved retractor enables one to retract the anterior pillar so as to get a good view of the tonsil bed, and at the same time to suck out blood so that the securing of bleeding points is greatly facilitated. The advantages of these instruments are: (1) the time of operation is at least halved; (2) difficult operations made easier; (3) perfect visibility; (4) less hæmorrhage; (5) less post-operative pain. When using these instruments enucleation of the tonsil becomes a quicker, safer, and easier procedure.

Messrs. Down Bros. of St. Thomas's-street, London, S.E., are the makers.

R. R. WOODS, M.B., B.Ch. Dub., F.R.C.S.I.

SPIRIT-PROOF CONTAINER FOR HYPODERMIC SYRINGE

THE usual type of "spirit-proof" container for hypodermic syringes is not entirely satisfactory, and I have designed a holder (see illustration) which has stood up to an extremely severe test. The cap fits on to the container by means of a long taper and is held in position by a detachable butterfly union nut. This mode of construction permits of the cap being accurately "ground-in," so that an absolutely spirit-proof joint can be obtained. It is not necessary to screw the union nut down tightly, as it merely has to hold the cap in position. I tested the holder by putting in 30 c.cm. of a saturated alcoholic solution of methylene-blue and inverting it in a water-bath at 75° C. (3·4° below the boiling-point of alcohol) for six hours. At the end of that period there was no visible coloration of the water either to the naked eye or when compared with a specimen of the water, taken from the bath before the start of the test, in a Klett colorimeter. When cooled the contents of the container measured 30 c.cm. To avoid all risk of the cone sticking, the act of unscrewing the union nut effects a "primary extraction" by separating the male and female halves. The union nut beds into a layer of white metal on the cap and does away with the need for washers. Messrs. Down Bros. are the makers.

H. M. STANLEY TURNER, M.D., D.T.M. & H.,
Wing Commander, R.A.F. (retd.).

THE LANCET

LONDON: SATURDAY, OCTOBER 28, 1933

THE CONTROL OF MEASLES IN LONDON

LONDON, with other large cities, suffers from biennial epidemics of measles; and since epidemic prevalence of the disease begins here in the autumn of the "odd" years, the next visitation is presumably imminent. The county medical officer's report[1] on measles in 1931–32 therefore appears very opportunely. Prepared under the general editorship of Dr. J. A. H. BRINCKER, it is the third of a series of special reports on the disease, and, as Sir FREDERICK MENZIES points out in a foreword, it is of special interest not only because it is so comprehensive but also because, for the first time, responsibility for control and treatment during the whole epidemic was confined to two authorities—the London County Council and the metropolitan borough councils, acting in close coöperation—instead of being divided among several.

The dimensions of the epidemic were much the same as those of its recent forerunners. The medical officers of health of 27 metropolitan boroughs received information as to 55,545 children suffering from measles, the highest incidence falling upon children in the 4–5 years age-group. According to the records of 24 boroughs the case mortality was 1·6 per cent. at all ages, ranging from 8·6 per cent. amongst infants under one year of age to fractions of 1 per cent. amongst children over three years of age. The infection began to be prevalent, as usual, at the end of October, but, as Dr. BRINCKER shows, the progress of the epidemic was unusually delayed, and real pressure upon the accommodation in the L.C.C. hospitals was not felt until February. From that time the numbers of measles patients admitted steadily increased until on April 10th there were no less than 2767 cases in the wards. When it is considered that even at the height of the epidemic all demands for beds in the infectious hospitals were met, except for a certain number of cases of minor infection admitted to general hospitals, this is a notable achievement. The decline of the epidemic was also slow, for only by the end of August did the daily number of admissions return to normal. In all, 11,526 measles patients were admitted, nearly a fifth of the known cases, and the deaths numbered 647 (5·6 per cent.). This means a further decline in the mortality of cases treated in hospital—it was 7 per cent. in 1927–28—but Dr. A. F. CAMERON thinks the fall is probably due to less discrimination in the removal of patients to institutions. Indeed, the opinion is expressed in the report that many of these patients could just as well have been cared for in their homes, especially if full advantage had been taken of the home-nursing facilities provided by the borough councils. Indiscriminate hospitalisation, particularly of very young children, is undesirable upon several grounds, and while accommodation should be available for all under five years of age whose home conditions are such as to prejudice their chances of recovery, Dr. CAMERON holds that with children over five, severity of attack alone should justify admission to hospital. Even so, however, since the proportion of children under five attacked during an epidemic is well over half the total, and since the conditions in the majority of London working-class homes are regarded as unsuitable, the problem of hospital provision for measles is no easy one to solve.

It is estimated that about half the fatal cases are secondary cases, and this shows the importance of promptly recognising measles and protecting susceptible contacts. In London school closure has been definitely abandoned in favour of daily surveillance by school nurses and health visitors with the object of detecting the disease in its earliest stages and providing either home-nursing or hospital treatment as circumstances dictate. Valuable as they are, however, these measures cannot afford any real protection for the exposed susceptibles; they cannot appreciably lessen the crop of secondary cases; and real protection is only given by passive immunisation. Attempts to produce specific animal sera have so far failed, but injection of the pooled serum of convalescents is a prophylactic measure of proved value which (according to the time of its administration) will secure either complete temporary protection or attenuation of the severity of the attack with resulting solid active immunity. But wherever prophylaxis with convalescent serum has been attempted on any large scale, as in France, the difficulty has always been that the demand far exceeded the supply. It is fortunate therefore that the serum of adults who have had measles in childhood retains, to a considerable degree, the specific protective properties acquired during the attack, thus providing, potentially, an abundant source of supply. Adult-immune serum was first used by R. DEGKWITZ in 1920, and subsequently by numerous French workers, notably R. DEBRÉ. Its employment in this country was first recorded in 1930 by E. H. R. HARRIES[2]; and in November, 1931, it was decided by representatives of the Ministry of Health, the Medical Research Council, and the L.C.C., to inquire into the value and scope of adult serum with a view to providing a general serum "pool." Dr. WILLIAM GUNN was placed in general charge of the investigation, and blood was obtained from voluntary donors, chiefly on the Council's nursing staff, and also, with the collaboration of Prof. C. C. OKELL, from medical students at University College. Some 26 litres of serum were prepared by Dr. J. E. MCCARTNEY according to a technique described in the report, and it was used either for prevention or attenuation in the L.C.C. special and general hospitals. The minimum dose was 10 c.cm. for children under three; for those over three the dose in cubic

[1] Obtainable from P. S. King and Son. London. 1933. No. 2996. 2*s*. 6*d*.

[2] Med. Officer, Feb. 15th, 1930, p. 77; see THE LANCET, 1930, i., 519.

centimetres was arrived at by multiplying the child's age by four. Adult serum was injected either for prevention or attenuation into 1475 children, the controls being 680 injections of convalescent serum, and observations on 207 uninjected contacts during the same epidemic period. A large number of observations upon convalescent serum were made by Dr. D. N. NABARRO at the Hospital for Sick Children, Great Ormond-street. The whole of the results were submitted to Mr. W. T. RUSSELL, of the London School of Hygiene and Tropical Medicine, for statistical analysis, and Dr. GUNN, from consideration of the clinical data controlled by statistical methods, concludes that while convalescent serum is a more potent prophylactic than adult serum for each age-group, the difference between them is of statistical significance only in respect of children under five years of age, and, even so, only in respect of injections given on or before the third day after exposure. After five years of age there is nothing to choose between them—apart from the fact that adult serum must be given in larger quantities. It is found that the attenuating results with half the standard dose given before the sixth day are as good as those with a full dose given on or after the sixth day, and hence, if attenuation is wanted, an important economy in serum is possible by adopting early injection. Dr. GUNN believes that the data show conclusively that adult serum is valuable for measles prophylaxis, that it is only slightly inferior to convalescent serum in its protective and attenuating action, and that it merits a high place in any future policy of measles control. It is to be hoped that this investigation will lead to its extensive use not only in London but throughout the country.

CALLUS IN BONE REPAIR

SOLUTION of continuity in most parts of the body is adequately repaired by fibrous tissue. Repair of bone by any tissue other than bone itself so completely destroys its function as to be called non-union. In the healing of fractures the formation of callus is the intermediate and characteristic process which determines that a non-differentiated granulation tissue, essentially of the same nature as appears in the healing of all wounds, shall develop into an organised calcified tissue. Recognition of the steps in the repair of a fracture—effusion of blood around the bone ends, deposition of calcium in young connective tissue to form the so-called primary callus, conversion of this into "bone callus" by the growth of trabeculæ, and the final reconstruction of typical bony tissue displacing the callus—is a commonplace of medical teaching. Appreciation of the factors which determine the occurrence of calcification, of ossification, and of pseudo-arthrosis is of recent date, and is as yet by no means general. Modern opinions on these subjects are based on the work of R. LERICHE and A. POLICARD, published in 1926 in their "Physiology of Bone," and on the monograph on the "Pathology of Bone" (1931) by Prof. D. M. GREIG, of the Royal College of Surgeons of Edinburgh. In these two volumes there is a complete departure from classical views on the osteogenetic power of the periosteum, and the osteoblast is displaced from its pedestal.

In brief, the thesis of LERICHE and POLICARD [1] is that hyperæmia of bone, whether from injury or disease, leads to a fairly rapid decalcification; whereas diminished blood-supply is followed by deposition of calcium—a process which is especially well marked in tissues of low metabolism. At the ends of long bones which are for some reason prevented from uniting, and are therefore functionless, the calcium deposition may be followed by sclerosis. In the words of GREIG, calcification is a sign of functional death. Ossification, on the other hand, is a sign of life. It can occur in the combined presence of fibroblasts and of an excess of calcium, provided only that the local blood-supply is adequate. Vascularity of the part, local excess of calcium, and the proliferation of fibroblasts are what GREIG terms the "synthesis qualified for the production of new bone." Before the injured bone ends can be reossified, LERICHE and POLICARD believe, the tissues of which they are composed must revert to the primitive mesoblastic type from which all connective tissues are evolved. Decalcification is the first stage in this process; at the same time it provides the local excess of calcium required. For it seems to be established that the calcium used in the repair of a fracture is obtained from the neighbouring bone, and not from the blood.

The sequence of events after a fracture can be summarised thus. The injury to the bone and to the soft parts, and in particular to the muscle, leads to a rapid effusion of blood. A hæmatoma is formed which strips up the periosteum to a varying extent. Local hyperæmia also develops, owing, in part at least, to the vasodilator action of the toxins freed by the trauma to the tissues. Calcium is mobilised from the injured bone ends. Within a few hours the hæmatoma proceeds to organise, and fibroblasts grow into it, just as in the formation of granulation tissue elsewhere. The surrounding connective tissues, whether muscle, fascia, or strands of torn periosteum, by reversion to the common mesoblastic type, are enabled to participate in the process. The preosseous substance of LERICHE and POLICARD is laid down among the connective tissue cells, and calcium is deposited in it. If anything happens to prevent this deposition of calcium, the connective tissue may follow its natural tendency, which is to form fibrous tissue, and there is always a race between the formation of fibrous tissue and the formation of bone callus. The factors which turn the scales in favour of bone formation are a reasonably accurate apposition of the ends of the bone, and a good local concentration of calcium. If the calcium mobilised from the bone ends is dispersed, either by suppuration or by effusion of synovial fluid, there is no satisfactory formation

[1] The theory was clearly expounded by Mr. R. Watson Jones and Dr. R. E. Roberts at a meeting of the radiological section of the Royal Society of Medicine last March (see THE LANCET, 1933, i., 639), and was also discussed by Mr. St. J. D. Buxton in his recent presidential address to the section of orthopædics (see THE LANCET, Oct. 7th, p. 808).

of callus. If there is poor apposition of the fractured ends, the fine osseous trabeculæ fail to grow across the gap in time, and the result is fibrous union. Lack of apposition may have various causes, such as failure to reduce the fracture, or over-extension by too efficient skeletal traction. It may also be due to interposition of muscle tissue between the bone ends. Fibrinous deposit on the muscle and encysted serum form insuperable barriers to the growth of bone callus. From the point of view of ultimately effecting union, the worst that can happen is that the ununited bone ends become devascularised; the sequence then is calcification and eburnation, and the formation of a false joint. If the bone remains soft and vascular, operative fixation may be mechanically difficult, but the chances of its being followed by osseous union are very much better.

Once a definite bone callus has formed, firm osseous union is likely. Growth of vessels and of orderly trabeculæ bridge the gap, and gradually displace the delicate and irregular trabeculæ of the callus. The calcium originally laid down in the organising hæmatoma is now used as a source of calcium for the developing bone. The periosteum is described by LERICHE and POLICARD as having a limiting and restraining action on the formation of callus, and this agrees well with radiological observations. Where there is little or no displacement, and consequently little disturbance of the periosteum, the amount of callus is small and, incidentally, union tends to be slow. In fractures involving much tearing and stripping up of the periosteum—as, for example, in the supracondylar fracture at the elbow—the formation of callus is irregular and excessive and extends into the muscle planes. If early movement and massage are resorted to, this callus becomes vascular and ossified—the so-called myositis ossificans.

The formation of a definite hæmatoma seems to be a most important factor, and W. J. POTTS [2] has tested this point in a series of controlled experiments on fractures artificially produced in animals. His results show that callus formation is definitely less if the blood is carefully sponged out than if it is left intact. Introduction of fresh blood to the site of fracture increased the amount of callus formed; introduction of washed fibrin had not this effect. The part played by the hæmatoma is probably not a simple one. In the first place, by stripping up the periosteum it gives an opportunity for freer development of callus. It also acts as a scaffold for the young fibroblasts and as a non-functional tissue in which calcium can be deposited. POTTS has suggested that the hæmatoma takes up phosphatase, an enzyme said to be secreted by the bone ends and initiating the chemical change of calcium which occurs during its deposition. Trypsin was injected in a 1 per cent. solution to the site of the fracture by KUGELMASS and BERG.[3] This had the effect of digesting away the organising blood clot, and resulted in delayed union. Accelerated union was produced by the same observers by introducing fibrinogen and thus stimulating the formation of young fibrous tissue. Actual hypertrophy of fibrous tissue results when movement of the affected part is free—a fact that is obvious to anyone who observes the healing of a scar on the neck—and complete immobilisation of a fracture during the stage of callus formation seems to have a sound scientific foundation. Once union by clinically firm callus is secured, the development of true vascular bone is probably encouraged, however, by increased functional activity and improvement of the circulation. In other words, disuse in the early stages will help the deposition of calcium and discourage the development of fibrous tissue. Use in the later stages will increase the vascularity which is the determining factor in the ossification of the callus.

[2] Surg., Gyn., and Obst., September, 1933, p. 318.
[3] Amer. Jour. Dis. Child., 1931, xli., 236.

THE FACT OF DEATH

ARDENT advocates like the late Sir GEORGE GREENWOOD laboured in vain to change the law of death certification so as to eliminate the risk of premature burial or failure to detect crime. This danger exists at present because it is possible for a certificate to be given on insufficient information. A recent case, disclosed at an inquest held last week at Bootle, may revive the public demand for a reform of the law. A woman gave birth to twins (a boy and a girl) on Oct. 1st. Dr. A attended her on that occasion; when he subsequently saw the babies on Oct. 9th, the boy's condition was precarious. On the 16th the child had convulsions. The mother and grandmother believed it was dead. The grandmother went to Dr. A and asked him to give a certificate of death. The doctor explained at the inquest that, at the moment of her visit, he had 30 or 40 patients waiting to consult him; he told her that he could not possibly come to see the child, and he advised her to call in another doctor. She pressed for the certificate nevertheless, and he signed it as the law authorised him to do. Section 20 of the Births and Deaths Registration Act, 1874, contemplates that the registered medical practitioner who attended the deceased "during his last illness" may sign in such circumstances, and the prescribed form of certificate is equally clear. There may sometimes be doubt as to the meaning of attendance during the deceased's last illness, but probably nobody would dispute that Dr. A had this qualification for certifying in the present case. The baby, however, was not dead. The mother and grandmother were mistaken. The mother's brother went off and reported the dubious position to the police. Another doctor came to examine the child; he found it alive, but it died at 4 A.M. the following morning. The coroner stated that no blame whatever attached to Dr. A, but naturally the dangers inherent in the present law have since been a matter of public discussion.

The Home Office committee on the law of coroners reported as follows in 1910:

"A certificate of death should not be accepted from a medical practitioner unless it states that he has, by personal inspection of the body, satisfied himself as to the fact of death. At present he may certify

merely on the information given by the relatives and we have had evidence that many certificates have been carelessly or even recklessly given. It is no fault of the law if premature burials do not take place. The present law of death certification offers every opportunity for premature burial and every facility for the concealment of crime."

These vigorous statements justified the Federation of Medical and Allied Services in preparing a Bill to change the law. In 1923 Sir FRANCIS FREMANTLE presented the Bill in the House of Commons. It required two certificates—a medical certificate of the fact of death and a certificate of the cause of death—before death could be registered, and it insisted that the fact of death must be certified by a registered medical practitioner who had viewed and examined the dead body, and was satisfied that life was extinct. There is no need to elaborate the fact that mistake may easily be made over the apparent manifestations of death. The late Sir FREDERICK TREVES published his recollections of cases of this kind; Sir GEORGE GREENWOOD enumerated other cases in his pamphlet on the Law of Death Certification. When Parliament discussed the Federation's proposals, the spokesman of the Ministry of Health observed that, if there were a complete medical inspection in every case as some people desired, it would mean heavy expense, and "would set up a universal and compulsory requirement for a very small chance indeed." The Federation's Bill was replaced by an official measure which became law in 1926.[1] The new Act contained no requirement as to examination of the body after death, although in the course of the debate someone quoted the Registrar-General as having declared that "only 40 per cent. of the people buried in this country are certified on medical evidence actually to be dead." A fresh change in the law will come on the day when some sensational case stirs public opinion. The incident at Bootle was a genuine mistake with no serious consequences. As the coroner observed, it would have been otherwise if there had been any suspicion of foul play or any evidence of heavy insurance.

[1] See THE LANCET, 1926, ii., 1295.

ANNOTATIONS

PRESIDENTS AND PROPHECIES

WHEN, on Friday last, Oct. 20th, Dr. Charles Porter, M.O.H. for the borough of St. Marylebone, delivered an address before the Society of Medical Officers of Health on his installation as president, he introduced a new responsibility for himself and his successors in the important post by an inquisition into how far the things predicted in the expansiveness of such deliveries came afterwards to materialise. Dr. Porter was able to find in the earlier orations much wisdom, and where his researches were not thus rewarded he made no detailed references. But the fact that, save in one or two instances, the forecasts of the presidents of the Society, since its foundation nearly 80 years ago, have not been much or exactly borne out has a great implication, and one that is at bottom a proof of the pace at which sanitary science has developed. As growth was rapid and prolific so it became impossible to foresee ramifications. The failure to prophesy thus showed a prophetic instinct, the instinct that unpredictable things were at hand. The case of the first president, Sir John Simon, is different. He occupied the chair for several years and whether he delivered a set address at the beginning of each session or no is uncertain; our excellent contemporary *Public Health* was not founded as the journal of the Society until 1888, before which date no precise records are forthcoming. But what Simon may have said can be deduced from what he did, and he was in the favourable position for a prophet of being largely able to bring about the things which he foresaw would conduce to the realisation of his views. We learn from Dr. Porter that between the foundation of the Society in 1856 and the first issue of *Public Health* there were 15 presidential addresses delivered, and Dr. S. R. Lovett, who was president in 1894, gave in a retrospective résumé the titles of these, from which one sees the extreme improbability that accurate prophecies could be made. The fundamental alterations in scientific, economic, and social activities that were beginning to occur some 80 years ago, and which have multiplied and gathered force ever since, must have constantly interfered with accurate forecasting. It is clear that deliveries upon such themes as the Cause of Disease, the Sanitary Condition of Communities, or the Scientific Work of the M.O.H., could contain only vague guesses, while new phases of pathology were becoming manifested daily in an environment which was rapidly revolutionising itself. Among the great sanitarians who were able in certain directions to look accurately into the future, a place must be found for Shirley Murphy, president in 1891–92, who foresaw the benefits to health that would follow proper inspection of animal food-supplies while indicating the measures needed for that end. Dr. Spottiswoode Cameron, also, who was president in 1902, was successful as a seer, his views in respect to housing and slum clearance having in certain directions been already adopted. And Sir John Robertson, president in 1916, said in October of that fearful year that the cause of public health would be hastened and not retarded by the war, an outlook which has proved amply correct. Dr. Porter's comments on the words of his predecessors brings out one striking thing: none of the fine and experienced workers in public health who were presidents of the Society in the earlier days ever seemed to contemplate the striking diminutions in the commoner infections that we now enjoy and that they were working to bring about; not one of them would have dared to suggest the possibility of such figures as our present vital statistics furnish.

THE DIAGNOSIS OF UNDULANT FEVER

UNDULANT fever, which many years ago was referred to by Nicolle as the "disease of the future," is now being regarded as the disease of the present. Not only in this country—where, according to Dalrymple-Champneys, actual records of about 190 cases have been obtained, and where, according to G. S. Wilson, serological evidence suggests an incidence of about 500 cases a year—but also in other parts of Europe and in the United States of America it continues to cause the liveliest concern. Diagnosis is usually made on the basis of the agglutination reaction, a titre of 1/100 or over in a pyrexial patient who is not in continual contact with infected animals, and

who is not in the habit of consuming large quantities of infected raw milk, being generally a reliable indication of active infection with brucella. Whenever possible blood cultures should be taken and incubated both in air and in an atmosphere of 10 per cent. CO_2. While, however, the causative organism can generally be recovered from patients with *melitensis* infections, the proportion of *abortus* cases yielding positive blood cultures is much lower—probably of the order of 15 per cent. Recent studies reported by Huddleson, Johnson, and Hamann[1] in Michigan suggest that, even with the use of blood cultures and serum agglutination tests, a certain number of definite cases of undulant fever are being missed. They have therefore been exploring the use of two other tests in diagnosis—the allergic skin reaction and the opsono-cytophagic index. The latter reaction is carried out by incubating 0·8 per cent. citrated whole blood with a thick suspension of brucella for half an hour at 37° C., making films, counting the number of ingested organisms in 25 leucocytes, and recording the results on a percentage scale. For the skin reaction a special nucleoprotein is used. In susceptible but uninfected persons both these tests are negative. In infected patients the skin test is positive and the cellular index negative or low. Immune subjects have a positive skin test and a high cellular index. On the basis of these two tests these investigators apparently feel justified in making a diagnosis of undulant fever even in the absence of agglutinins in the blood-serum. But the method is still far too much in its infancy to be used for routine purposes. Indeed, experience of other fevers affords but little hope that estimation of the bacteriotropins developing as the result of infection are likely to be of much value in the diagnosis of active disease. It has yet to be shown that definite cases of undulant fever with a persistently negative agglutination reaction are at all common. Many positive reactions are undoubtedly missed by use of an unsuitable bacterial suspension, and by failure to put up a sufficiently wide range of dilutions. Zone phenomena are by no means infrequent, and unless dilutions extending from 1/20 to 1/2560 are prepared, occasional cases will undoubtedly be reported as negative. While there is every reason to explore fresh methods of detecting brucella infection, particularly in children, the actual diagnosis of undulant fever in the absence either of a positive blood culture or a positive agglutination reaction must for the moment be deprecated. It is better to leave a fever undiagnosed than to label it on insufficient evidence with a specific name, and thus prevent any further inquiry into its real causation.

STATISTICAL PRESENTATION OF RESULTS OF TREATMENT

"STONE dead has no fellow" is an old saying that is particularly applicable to the assessment of operative success—or lack of success. The survival-rate of cancer patients, for instance, treated surgically or by radium, measured over a period of years, is the only sound criterion of success, and is now being widely adopted. A similar measure has been used to determine the effects of sanatorium treatment of tuberculosis. On the other hand, it is obvious that the survival-rate presents only one aspect of the result of treatment. Survival does not necessarily denote a freedom from disability, and in conditions which only rarely lead to death it is freedom from disability which is the important criterion. The difficulty is to secure an adequately objective measure of freedom from disability. In a study published on p. 999, Dr. H. V. Prynne, the chief medical officer to the Post Office, suggests that such a measure is available for the Post Office staff (numbering nearly a quarter of a million) in the accurately recorded sickness records. For instance, investigating a series of gastric and duodenal ulcer cases, operated upon in different ways, he finds that the average sick-rate per year per employee for disorder of the digestive system was 12 days after gastro-enterostomy, 22 days after suture, 29 days after excision. Taken at their face value, the figures suggest a considerable advantage to the patients treated by gastro-enterostomy. But were patients treated in these various ways actually *in pari materia* before they were relegated to the different operative groups? It must, at the least, seem unlikely; it is not even recorded whether or not any of the operations were undertaken at a critical time, for example, following perforation, and the relative advantages thus become difficult to interpret. Another example that may be cited from Dr. Prynne's paper is the result in 17 cases of exophthalmic goitre of treatment by thyroidectomy. Of these, 12 are reported to have had no recurrence of the condition in periods varying between one and ten years. On the other hand, the average sick-rate for all conditions per year per officer was nearly 29 days, of which 11·6 were due to recurrence of exophthalmic goitre and 5·4 to nervous and heart symptoms probably associated with the condition of exophthalmic goitre. The operation in a number of cases has failed to prevent recurrence, but to deduce therefore that it has been valueless would hardly be justifiable. We do not know, and obviously can never know, how such cases would have fared, and what their sick-rate would have been if they had not been submitted to operation. A more clear-cut issue is presented in the effect of operation on the knee in cases of semilunar cartilage injury. Of 43 non-operation cases 63 per cent. incurred further sick absence due to the old injury or to further accidents to the knee, while of 42 cases operated upon only 24 per cent. incurred further sick absence for similar reasons. It is clear that, in spite of the limitations suggested above, the objective measure of success proposed by Dr. Prynne deserves close consideration by such medical industrial workers as have the sickness statistics of their patients available.

[1] Amer. Jour. Pub. Health, September, 1933, p. 917.

THE VISIT OF PROF. BURGER

THE Semon lecture will be delivered on Thursday, Nov. 2nd, at the Royal Society of Medicine, by Prof. H. Burger, of Amsterdam, his subject being the So-called Associated Paralyses of the Larynx and Pharynx (Multiple Cranial Nerve Palsy). Dr. Burger will deliver the lecture in English; like so many Dutchmen he is an excellent linguist. It was partly for this reason that in 1909 he was appointed secretary-general of the International Committee for the International Congress of Medicine. In this capacity he acted when the last International Congress was held, under the presidency of Sir Thomas Barlow, in London in the year 1913. Dr. Burger is still the secretary-general, but there seems little prospect of another International Congress for general medicine at present. Our visitor is professor of otolaryngology in the University of Amsterdam. He is a man of many interests. He was Rector Magnificus of his university during the academic year 1927–28, and he has three times been president of the Dutch Medical Association. He is a man of culture and wide interests.

On Wednesday, Nov. 1st, at 5 P.M., he will give an

address before the section of the history of medicine in the Royal Society of Medicine with the interesting title: the Doctor, the Quack, and the Appetite of the Public for Magic in Medicine.

THE KIDNEY IN ECLAMPSIA

THE cause and nature of eclampsia is still so obscure that any accurate information about it is welcome. And though Prof. J. S. Dunn and Dr. Dugald Baird, of Glasgow, themselves doubt whether their findings throw much light on the seizures and fatalities of the disease, their careful description [1] of the changes in the kidneys is a valuable contribution to our knowledge of it. In nine out of ten fatal cases of clinical eclampsia they found the same uniform changes in the glomeruli—frequently enlargement and increased lobulation and invariably increased density of the tufts with great diminution or absence of red corpuscles. The deviations from the normal are not dramatically obvious on casual examination and they are made much more plain if the connective tissue is specially stained. It appears then that the thickening and partial obstruction of the capillaries is caused partly by an increase or enlargement of their endothelial cells and, perhaps more definitely, by a swelling of the basement membrane. The lesion is diffuse in the sense that every tuft is involved and the rest of the kidney shows no changes or only such as may be regarded as incidental. Examination of old sections of the kidneys from 30 other obstetric casualties showed the characteristic lesion in 7; the other 23 were free from it—which is sufficient evidence that it is not simply the result of pregnancy. But, Dunn and Baird point out, the change is not severe and, as one of their cases showed, it can be recovered from completely. Hence they suspect that it is the underlying cause of the common albuminuria and nephritis of pregnancy which is usually mild and rarely threatens life; it is revealed by the fatal complication of eclampsia for the development of which some impairment of kidney function is necessary though this by itself will not produce the convulsions and hæmorrhages.

SLUM CLEARANCE

WE have received an influentially signed appeal in favour of reserving, in all plans for reconditioning of new houses, suitable sites for the future building of nursery schools in convenient proximity to the houses. The appeal is timely. Public attention has been acutely raised to the urgency of slum clearance, but it is pointed out by the signatories to the appeal that exclusive concentration on the problem of good houses may result in the missing of a fine opportunity. For better shelter for a large number of families should clearly carry with it better provision for their welfare, and should therefore include attention to the needs of young children. "Especially we wish to urge the immediate reservation of sites for nursery schools," says the appeal. "The very young children, not yet of school age, need care which cannot be fully given by the mother whose energies are fully taxed by the claims of a baby, her husband, and the management of the home. If successful and happy family life is to be maintained she must receive some assistance. It is now widely recognised that the open-air nursery school supplies what is wanted in the best way yet devised. It provides the needed space for the little children's active growth, it supplies medical supervision and healthy conditions, it gives each child opportunity for sound and happy mental and social training in close coöperation with the home. Thus physical and mental health for the future is assured, and a measure that may look like a luxury to some is seen to be no less than a national economy." The appeal is signed by the Archbishop of York and a representative group of persons interested in the problems of child welfare and will, we hope, receive the attention of those in whose hands the developments of town planning lie. For what is sought is abundantly wanted.

THE PROBLEMS OF ASTHMA

WHETHER when its secret is ultimately unfolded the causation of asthma will be found to be as complex as at present seems likely, may perhaps be doubted. Seldom can the problems of any disorder have received attention from so many angles as those of this particularly elusive complaint. Hardly any special branch in medicine or its ancillary sciences has failed to contribute its quota to the discussion of asthma. In such a welter of opposing views as at present obtain on the subject of asthma, it is difficult for the scientific mind to move with precision. At the present time a discussion on asthma can be relied upon to produce a stimulating debate, though the views put forward and the wit with which they are controverted will depend largely on what speakers have been invited to attend. The recent meeting of the Paddington Medical Society, reported on another page, was concerned for the most part with arguments which have been heard before; particular interest, however, pertains to the strength with which the claims of psychotherapy were put forward. In following the psychoanalyst's approach to asthma, readers will feel themselves on familiar ground; emphasis is laid here, as in connexion with many other disorders, on the underlying nervous factor, the anxiety state with its obsessions and phobias, and so on.

Unfortunately the discussion coincided in date, though not in time, with another meeting at which asthma was considered from an entirely new standpoint. It would have been of interest to study the reactions of those who took part to the ideas put out by Prof. J. H. Burn, in his presidential address to the section of therapeutics of the Royal Society of Medicine, under the title "A Pharmacological Approach to the Cause of Asthma." [1] The facts which his own investigations have elicited so precisely give promise of opening up important avenues towards its central problems. The results are so suggestive and so much in consonance with clinical observations, that it is to be hoped that further research will add to our indebtedness to him. His investigations concerned tyramine, the amine obtained by decarboxylation from the amino-acid tyrosine. Its action was first found by Dale and Dixon some 25 years ago to be similar to, though weaker than, that of adrenaline; but its power of raising blood pressure, it was later found by Tainter and Chang, was abolished by a previous injection of cocaine, whereas the similar effect of adrenaline was enhanced in these circumstances. It is the problem created by this dissimilarity which Prof. Burn has studied. In the first stage of his investigations he found that in a perfused organ adrenaline showed its constrictor effect, but that neither tyramine nor ephedrine could act in this way except in the presence of adrenaline. This suggested that the mode of action of adrenaline differed from that of tyramine and ephedrine, and this was proved to be the case by perfusion experiments in organs in

[1] Jour. Path. and Bact., 1933, xxxvii., 291.

[1] See THE LANCET, Oct. 14th, p. 867.

which the sympathetic fibres had degenerated. It was concluded from these that tyramine and ephedrine acted upon the sympathetic nerve-ending itself, and that adrenaline must act beyond the nerve-ending. It is known that the para-sympathetic nerves act by the liberation of acetylcholine at their terminations, and it is thought that the sympathetic nerves act by the liberation of adrenaline or an adrenaline-like substance. To explain this action of the sympathetic, Prof. Burn argued that there must be some store of adrenaline at the nerve-ending to be released; in its absence, sympathetic stimulation produced no effect until it was replenished. Similarly it was found that, in the presence of adrenaline, both ephedrine and sympathetic stimulation produced vasomotor effects which were otherwise not seen; and thus the conclusion was reached that the degree of response to sympathetic stimulation depended on the amount of adrenaline in the circulation.

Prof. Burn's thesis, therefore, is that those with the least amount of adrenaline circulating will be predisposed to asthma. This conclusion is not out of line with what is sometimes seen in clinical medicine. Although the physician cannot judge of the activity of the adrenal glands with the same accuracy that is possible in connection with the thyroid gland and pancreas, he is able to suspect strongly in certain cases, other than instances of Addison's disease, that the patient is deficient in adrenaline; and amongst such cases are those of a certain type of asthmatic who is only very temporarily relieved by injections of adrenaline. On the other hand, it is impossible to deny that a great many asthmatics show none of the bronzing of the skin or lowered blood pressure which might indicate persistent adrenal deficiency; and in any case it is impossible to recognise if apparent de-adrenalinization is due to defective supply or to some abnormal neutralisation of adrenaline in the circulation. What Prof. Burn has called the "pharmacological approach" is certainly one which will stimulate interest.

QUANTITATIVE DETERMINATIONS IN BACTERIOPHAGE ACTIVITY

THE trend of the more fundamental recent work upon the bacteriophage has been in the direction of quantitative measurements of its activity. An important paper by Prof. Georges Dreyer and Miss M. Campbell-Renton[1] offers a good example of the application of such methods and the results which may be achieved by them. These workers have produced a standardised procedure for the production of bare plaques upon thin agar plates by bacteriophage and for the counting of their numbers under varied conditions. By the ingenious device of photographing the plates of growth at an enlargement of 32–35 diameters they were able to count the plaques produced with great accuracy. It has been stated, and widely accepted, that the number of plaques (which d'Herelle regards as colonies) appearing when development is complete is a constant function of the dilution of a phage-containing fluid. Dreyer and Campbell-Renton are able to show that this is not true but that as the concentration of the preparation increases the ratio diminishes. In other words, where a 1 in 512 dilution yields 35 plaques, a 1 in 64 dilution yields 192, instead of the theoretical 280. From a large number of observations of bacteriophage action at different dilutions, they have been able to construct a standard curve illustrating this relationship, which they have found to be constant for all varieties of phage and substrate organisms examined. From the same results they have deduced a formula for the relationship at different concentrations which gives a figure closely approximating to their actual findings, within the limits of their observations. Applying these results to a number of observations by other authors they show the same relationship to be present. Other observations which have been made in the light of these findings are upon the relationship of the agar concentration to the number of plaques developing and the deterioration of a bacteriophage preparation at 37° C. In respect of the first of these they find that a given staphylococcal bacteriophage is twice as active on 1·5 per cent. agar as upon a 4 per cent. medium, as regards the number of plaques produced, whilst the size of these is less upon the denser medium. As to deterioration, it has been found that after 24 hours at 37° C. the strength of a given bacteriophage is less than half that of the original preparation. Dreyer and Campbell-Renton also produce measurements showing the degree to which dead organisms in a culture inhibit bacteriolytic activity. Such results are not only extremely interesting in themselves but are of great importance to those working upon the quantitative aspects of this problem, for they emphasise the necessity for the strictest control and illustrate the pitfalls which may be entered in assuming that unexamined factors are of no importance.

[1] Jour. Path. and Bact., 1933, xxxvi., 399.

THE ROBERT JONES MEMORIAL

EARLY in the year we published an influentially signed appeal for contributions to a national memorial in commemoration of the life and work of Sir Robert Jones, the world-known orthopædic surgeon. The proposal placed before our readers was to found a lectureship in the Royal College of Surgeons of England bearing his name and associated with a travelling research fellowship in orthopædics, this to be awarded alternately by the College of Surgeons and the University of Liverpool with which Robert Jones had a lifelong association. We have now received a letter bringing the scheme of the Memorial forward in more detail. The signatories to the letter are Lord Athlone, Lord Derby, Lord Moynihan, Lord Dawson of Penn, Sir Holburt Waring, and Lieut.-General H. D. Fawcus, and their message to our readers is that the Memorial should bear testimony to Robert Jones's constructive idealism and his deep devotion to the care of crippled children, and to the study of such preventive measures as would prevent the life-long damage following upon ignorance or neglect.

We commend the appeal to the notice of our readers as one that should not only be personally supported, but could be well brought through their influence before the public, for it is a public responsibility that Robert Jones's name should be affectionately remembered and that the work which he initiated should go on. Donations may now be forwarded to the hon. treasurer of the Robert Jones National Memorial, Quadrant House, 55, Pall Mall, S.W.

NOBEL CENTENARY PRIZEMAN

THE hundredth anniversary of the birth of Alfred Nobel fell on Saturday last, when the Nobel prize in medicine or physiology was awarded to Thomas Hunt Morgan, professor of biology since 1928 in the California Institute of Technology. Prof. Morgan's claim to the laurel is unquestioned, for no one has done more to clear up the mechanism of Mendelian heredity. Mendel himself worked out his genetic hypothesis on noble and beautiful members of the animal and vegetable kingdom whose cycle of development was completed in terms of months or years. Morgan worked them out on the prolific and

ephemeral fly known as drosophila and enabled biologists to ascertain in days or weeks what had previously taken them months or years, and thus to speed up the progress of cytology so that the theory and practice of chromosomes is now the vade-mecum of every biological student. Prof. Morgan is a foreign member of the Royal Society, which awarded him its Darwin medal in 1924. He has presided over the American Association for the Advancement of Science and is still in the prime of life, having been born in 1866. The award enhances the admirable foresight of the eminent Swedish engineer who left the greater part of his fortune to found prizes of merit. The second award of the prize in medicine or physiology was made in 1902 to Sir Ronald Ross, and since then awards have been made to A. V. Hill, F. G. Banting, and J. J. R. Macleod, Sir Gowland Hopkins, Sir Charles Sherrington and E. D. Adrian. The prizes are awarded by the Caroline Medico-Chirurgical Institute in Stockholm, and it is interesting to note how they have been distributed over the world during these 30 years. Nine have gone in all to the English-speaking races, six to Germany, three each to France and Denmark, two each to Holland and Austria, and one each to Sweden, Italy, Switzerland, Spain, Belgium, Russia and Tunis. No one has questioned the awards, and in these days of enhanced nationalism it is well that from a quarter such as this should come an impartial recognition of merit in medicine or physiology free from bias of race or nationality. Such an even may indeed come to be as surprising to future generations as the fact that the greatest peace prize in the world comes from the fortune of the inventor of dynamite seems to our own.

A DEFENCE TRUST

THE position of the National Insurance Defence Trust is not very satisfactory. It arose from the feeling that it was desirable to have a fund, contributed by all medical practitioners working the Act, which could be used for fighting purposes. The panel conference of 1926 decided that there should be no relaxation of effort until £250,000 had been subscribed, although why that sum was fixed no one seems to know; were it necessary, for example, at any time to cease work under the Act, it would evidently be insufficient for compensating those who lost financially through so doing. Such a strike is, however, now so unlikely that something might be done with the interest to benefit insurance practice. The trustees have in the past distinguished between subscriptions to the fund which go towards capital and the interest which accrues from investment. Some of this interest is used to cover the expenses of delegates to the annual conferences, and part expenses of the Insurance Acts Committee and its subcommittees. Honoraria are also paid to members of the central advisory committee. For example, Dr. X goes to Bristol to take part in oral representations with an official of the Ministry of Health in a case where Dr. P has been found guilty of a breach of the terms of service by the local medical service subcommittee. Dr. P has been advised that in consequence a sum of (say) £20 will be withheld from his quarterly cheque, and he desires to point out the iniquity of such a decision to the Ministry. Dr. X attends this oral representation, and assists Dr. P in argument against the deduction, and receives (probably) 5 guineas and expenses. But payments such as these do not use up the whole interest, and last year over £7000 was added to the capital for investment. At the 1932 panel conference an attempt was made to secure payment from the fund to men who gave lectures to final year students. This was not agreed to, as it was thought that medical schools should pay such lecture fees, but that conference did agree to make grants from the fund to elderly or infirm doctors who retired from practice in the interests of the service as a whole. The suggestion made by Lancashire at this year's conference (see p. 996) to extend the practice to chronic invalids who were badly off was, after interesting debate, turned down.

These payments out of trust funds are, we believe, imperfectly realised by the bulk of the subscribers, many of whom are under the impression that the interest all goes to swell the capital. Yet there is no question that the defrayal of the heavy expenses of the I.A.C. and the panel conferences comes within the statutory definition of the objects of the trust. Many insurance doctors did not subscribe in the first instance, some did and have given up, while in certain areas keen secretaries have completed the local quota. There are even some panel committees, still generously treated by the conference, which have never subscribed at all. In his statement at last week's conference the treasurer of the trust remarked one Scottish burgh had lost its reputation by subscribing 115 per cent. of its quota. Perhaps, he said, they recognise good insurance in the fund.

AFTERMATH OF DROUGHT

ALTHOUGH it is admitted that the water-supplies of many, perhaps most, of our villages and of several of our towns are far from satisfactory, yet under ordinary circumstances nothing happens, the morbidity-rates remain low and, in spite of the Cassandra-like utterances of medical officers and other sanitary experts, all seems well. We are now at the end of an extraordinary summer in which water has failed, entirely or partially, in some places, and in others it must be supposed that the supply has been kept up by a circulatory system in which deficiencies have been made up by in-leakages of more or less filtered sewage. The autumn has begun with rather an unusual number of reports of outbreaks of typhoid, paratyphoid, and less serious intestinal disturbances. A considerable outbreak of typhoid at Berrywood Mental Hospital, near Northampton, does not appear to be due to the water of that town, which the medical officer assures us is above suspicion, as is also that of the private supply to the institution, which has for the last 18 months been chlorinated. The recurrence of paratyphoid at Epping may be due to milk rather than water, but the persistence for a long period after the last outbreak of organisms in the water of the Chobbins brook, observed by Houston, shows how sewage from a place so affected may be a menace to the water-supply of a district where watch is not kept. The prevalence of gastro-enteritis at Kidderminster is admittedly due to contaminated water, as the local authorities have advised inhabitants to boil their water, and are hastening to instal chlorinating plant. They realise that time must be allowed for the effect of the chlorine to be fully transmitted through a probably infected pipe system, and ultimately to yield a sterile water. West Wylam, a Tyne village of 2500 inhabitants, has had a small outbreak of typhoid of uncertain origin and, so far, confined to one family. Water has not been mentioned in connexion with this outbreak, either as a possible cause or as certainly not the cause, but it would be pertinent to inquire of how many towns and villages in this country it could be stated with reasonable certainty that water was not the cause of an epidemic which could be carried by this vehicle. It may be hoped that the inconveniences and dangers of the past season may cause some awakening of the pure water conscience.

THE PREVENTIVE ASPECTS OF MEDICINE

A Series of Lectures in progress during the Winter Session at King's College Hospital Medical School

III.—WATER-SUPPLY IN RELATION TO DISEASE

FROM the earliest times it has been recognised that an ample supply of pure water is essential to any community, and the great aqueducts that brought water to ancient Rome are familiar to all. During this century Sir Arthur Evans has discovered in the palace of Knossos, built 4000 years ago in Crete, a line of terra-cotta pipes laid at the side of a paved road. These pipes led from the hills, from which an aqueduct still supplies Candia. Each pipe is 2½ ft. long, with a diameter of 6 in. at the broad end and 4 in. at the narrow end. Ridges and raised collars are provided at the ends of the pipes, which give an extra hold over the cement binding the two pipes together.

All water comes from rain or snow, and when it falls part is evaporated, the amount varying with the temperature, a second part flows off in the direction of the incline of the surface, and a third part sinks into the soil. The latter forms the subterranean sources of water whose natural outlets are springs and whose artificial outlets are wells. The sources of water-supply are :—

(1) *Rain water*, which may be collected from roofs or from prepared surfaces, a well-known example being the eastern face of the Rock of Gibraltar. The rainfall in England varies from 20 in. on the east coast to more than 100 in. per annum on the coast of Cumberland, 1 in. of rain being equal to 101 tons of water per acre. If rain water is used for drinking purposes the first washings of the roof should be rejected, as it will contain impurities. Rain water is very soft and should be stored in an underground cistern which should not be made of lead.

(2) *Upland surface water.*—Rain falling on mountains and moors runs off in streams and may form lakes. In order to facilitate the water-supply streams may be impounded by building a dam across a valley. Reservoirs thus made may be a great distance from the towns they supply. The water of Manchester is brought 90 miles from Thirlmere, the water of Liverpool 68 miles from Vyrnwy, the water of Glasgow 34 miles from Loch Katrina. Upland surface waters are soft, and may be acid owing to their contact with peat.

(3) *Streams and rivers* provide pure water on hills near their source. The water from springs may be contaminated by sewage and by passing through cultivated lands. A certain amount of purification takes place by oxidation and by sedimentation.

(4) *Wells and springs.*—When rain falls part of it sinks into the ground until it meets an impervious stratum ; it is then held up and forms underground water which tends to move towards the lowest point. The level of the underground water varies, being highest in March and lowest in October. In order to obtain water from this source wells are bored which may be shallow, deep, or Artesian wells. *Shallow wells* are sunk into the superficial porous beds of sand and so forth, overlying an impermeable layer of clay or rock. They are liable to surface pollution from leaky drains or cesspools. In order to protect a well from pollution it should be lined with some impervious substance for 20 ft. The coping should be sufficient, the area around should slope to a radius of 6 ft., the well should have a cover and be provided with a pump, and in regard to the flow of underground water, the well should be above and not less than 100 ft. from any cesspool. *Deep wells* are those which penetrate the first impervious stratum. The water-supply usually comes from some distance, and is generally hard, owing to the mineral salts dissolved. *Artesian wells* are those where the underground water is at a higher level than the point at which the well is sunk. On penetrating the impervious stratum, the water rushes out and a small fountain is the result.

HARD WATER

Temporary hardness which is caused by the carbonates of magnesium and calcium can be treated by the addition of lime or by boiling. Permanent hardness due to the sulphates and chlorides of calcium and magnesium is best dealt with by the permutit process. Permutit is a zeolite sand, a silicate of aluminium and sodium ($2\ SiO_2$—Al_2O_3—Na_2O—$6\ H_2O$). In this process the water gives up its calcium and magnesium, receiving sodium in exchange. The permutit is regenerated by the addition of a solution of common salt, and is then cleansed by flushing with water.

BACTERIAL DISEASES DUE TO IMPURE WATER

The most important of these are typhoid and cholera. In these diseases the bacilli are found in the fæces, and in typhoid also in the urine of the patient. When drainage is faulty and water-supply insufficiently protected epidemics may result. In 1897 Dr. Ernest Hart prepared a summary of 206 outbreaks of water-borne typhoid during the 30 years 1863 to 1893. The following are recent examples of epidemics which have been reported.

On Oct. 13th, 1932, the medical officer of health of Denby reported an outbreak which was probably due to infected water from the Square Wood reservoir, part of the water-supply of the district council. The infecting case was that of a young woman who was taken ill on Sept. 7th in a cottage at the head of the valley above this reservoir. Down this valley runs the Munchcliffe Beck, and the cottage drainage discharged on the hillside and was washed into this stream. Although previously the Munchcliffe Beck had been diverted so as not to communicate with the reservoir, it did, in fact, do so through land drains. Dr. W. V. Shaw, one of the medical officers of the Ministry of Health, was able to trace the effluent from the cottage occupied by the patient through the Beck to the reservoir. The patient was removed to an isolation hospital with typhoid on Sept. 19th, but an epidemic resulted in which 56 cases were notified between Sept. 17th and Oct. 31st, in all 75 cases, and 11 deaths occurred. The steps taken to deal with the outbreak included the removal of all cases to hospital and cutting off the supply from the Square Wood reservoir. No cases were discharged from the hospital until three negative bacteriological reports of their excreta had been received.

At Malton, again, in 1932 an epidemic occurred in which there were 270 cases and 23 deaths. In this epidemic a patient was admitted to a poor-law institution suffering from fever. He remained in for five weeks, and during that time a leaking drain transmitted typhoid organisms to a well which was part of the water-supply of the town. The epidemic was controlled by the repair of the broken drain, the removal of the patient to an isolation hospital, and the chlorination of the water-supply.

CHOLERA

This disease is endemic in India, and in the past epidemics have occurred in England, London having suffered severely. There were four epidemics between 1832 and 1866, the number of deaths varying from 14,000 in 1849 to 5000 in 1832. It is interesting to note that the severity of the 1849 epidemic varied with the impurity of the water-supply. In the districts which derived their water from the Thames above Battersea there were only 15 deaths per 10,000, whilst in the districts which derived their water from the river between Battersea and Waterloo Bridges there were 123 deaths per 10,000. It may be noted that at that time the London sewage was discharged directly into the river. Since 1866 there has been no epidemic of cholera in London.

The value of sand filtration was well shown in the epidemic which occurred in Hamburg in 1892 and Altona in 1893. The water-supply at Hamburg was unfiltered and derived from the tidal Elbe at a point where the river was little contaminated. Altona's water-supply was derived from the Elbe below Hamburg after the river had received the sewage of 800,000 people, but careful sand filtration was practised. In 1892 there were 17,000 cases and 8600 deaths in Hamburg, whilst Altona remained free. Early in 1893, however, a number of cases occurred in Altona, and it was found that one of the sand filters had been incapacitated owing to freezing of the surface layers of the sand during the process of cleansing.

LEAD POISONING CAUSED BY WATER-SUPPLY

In 1885 the medical practitioners in Sheffield found that certain of their patients were suffering from lead poisoning, and this condition could not be traced to the trade in which they were engaged. The circumstances were reported to the medical officer of health, Dr. Sinclair White, who immediately took steps to ascertain the cause. The water-supply of the houses where these patients lived was analysed, and in every case sufficient lead was found in the water to account for toxic symptoms. The symptoms of chronic lead poisoning were typical. It will be remembered that these are lack of energy; pallor; loss of appetite; a blue line at the junction of the gum and teeth; constipation; colic; headache; pains in the joints; tremor of the tongue and of the lips; drop wrist due to paralysis of the extensor muscles of the forearm; and, finally, changes in the kidney and the brain which may lead to fatal result.

Dr. Sinclair White set himself to answer the following questions: (1) Where does the lead in the water come from? (2) Is the contamination general? (3) What amount of lead is found in the water, and what influences the amount? (4) What remedy can be suggested?

(1) *Where does the lead come from?* This question was answered by analysing the water from the street pipes, which were made of iron. The samples so obtained were free from lead. On the other hand, the water taken from taps in the houses was found to contain lead.

(2) *Is the contamination general?* The answer to this question is, No. Sheffield was supplied at that time by two reservoirs: (*a*) the high level, known as the Redmires Reservoir; (*b*) the low level, known as the Strines Reservoir. It was found that the water from the Redmires Reservoir dissolved lead, whilst that from the Strines did not. Analysis showed also that the taking up of lead was not connected with any sewage pollution.

The following facts indicated the difference between the two reservoirs. In both cases the source of the water was from the surface of moorland, but in the case of Redmires the surface peat was abundant, and the shale underneath the peat contained iron pyrites (FeS_2). An important point in the Redmires water was also the fact that it had a definite acid reaction, the reaction being more marked in samples taken high up on the moor, the figure varying from 0·7 to 0·2 grain of acid per gallon. On the other hand, at the Strines Reservoir the depth of the peat was much less and the pyrites was present in a much smaller quantity. In the catchment area there was less stagnant water, and it was found that it was not acid to litmus. Another fact noted was that the Strines water, on passing down from the reservoir to the town, flowed through a conduit built of brick and mortar. There is no doubt that the water on passing over mortar would gain in alkalinity.

Three suggestions were made as to the cause of the acidity in the Redmires water:—

(*a*) Iron pyrites in the presence of air and damp produce hydrate of iron and sulphuric acid. In the presence of lead, white lead sulphate would be formed, a salt capable of being dissolved in water up to grs. 3 per gallon, a poisonous quantity.

(*b*) The decomposition of vegetable matter such as peat gives rise to ulmic and humic acids. It will be remembered that the amount of peat was much greater at Redmires than at Strines, and the amount of organic matter was also found to be greater in the Redmires water than in the Strines water.

(*c*) The air of Sheffield being often charged with smoke contains SO_2. In the presence of damp, H_2SO_4 will be formed, and might add to the acidity of the water in the reservoirs, but this suggested cause would have operated equally in the case of the Strines reservoir.

(3) *The amount of lead in the water* from the Redmires source was found to vary with the time of day at which the samples were taken. If taken first thing in the morning, after the water had been standing for hours in contact with the lead pipe, and compared with samples taken during the afternoon, it was found that the quantity of lead in the morning varied from gr. 0·7 to 0·43 per gallon, whilst the afternoon samples varied from gr. 0·49 per gallon to none. It was also found that hot water took up more lead than cold water. Experiments were also carried out in order to estimate the effect of pressure in the pipes. Water exposed for four hours at a pressure of 140 lb. to the square inch took up gr. 0·28 per gallon, whilst with no pressure only gr. 0·14 per gallon was absorbed. In 14 hours the amount of lead taken up was greater, and this also applied to the water standing in a new lead pipe, the conclusion being that pressure acts (1) by intensifying the action on the lead, and (2) by dilating the pipe, which disturbs the protective lining, and, by making longitudinal cracks, exposes a new surface of lead to the water. Experts were agreed that gr. 0·1 per gallon is dangerous. It was found that symptoms in this district varied (*a*) with the quantity of water drunk, (*b*) with the use or otherwise of filters, for in this way lead in water is partially or completely removed. When water was used in making tea and coffee the lead was precipitated, and therefore the danger diminished. It was found that long pipes, new pipes, and the use of lead cisterns increased the amount of lead found in the water.

Remedies.—Slate cisterns were recommended and the provision of iron pipes discussed. The great disadvantage of this type of pipe is the fact that it cannot be bent, and that many joints are expensive and inconvenient to lay in a house, so that the treatment of the water when it leaves the reservoir was advocated. It was suggested that by passing the water through a container charged with lumps of limestone the acidity would be removed, and would be thus unable to take up lead when it entered the lead pipes in the houses. Since then it has been found more convenient to add chalk to the water, and this process is carried out up to the present time with complete success.

WORMS

Many species of parasitic worms may be transmitted by water. Certain worms in this country may invade man through the water-supply, and an epidemic of infection with *Ascaris lumbricoides* occurred in 1923 in a

small village in Hertfordshire with a population of 60 people. Apparently everyone suffered from these parasites, and the water-supply of the village, derived from a well which was in a defective condition, was suspected. The epidemic was a serious one, as more than one death occurred among children.

In Africa bilharziasis is due to a worm, the adults living in the abdominal veins of man. The eggs appear in the urine and fæces, reach water, and enter minute snails penetrating their antennæ. Tadpole-like cercariæ develop, enter the water again and pierce the skin or mucous membrane of man, thus entering the blood stream again. The symptoms produced are blood in the urine, anæmia, and ulceration of the intestine.

Protection may be obtained by filtration or boiling for drinking purposes, whilst liquor cresol in the proportion of 1 in 10,000 renders the water safe for bathing.

THE LONDON WATER-SUPPLY

The London water is derived from river sources and deep wells. The usual quantity of water considered essential is 30 gallons per head per day. In London 37 gallons is provided. This quantity includes what is necessary for drinking, cooking, washing, sanitation, public baths, cleansing of streets, the putting out of fires, and also what is necessary for trade purposes. In London 58 per cent. of the water is taken from the Thames, 25 per cent. from the Lee, and 17 per cent. from the deep wells, the length of the London water mains being 6970 miles. In this connexion it is of interest to note that the longest river in the world, the Amazon, is only 4000 miles. Other features in the London supply include 49 storage reservoirs, 92 service reservoirs, 178 filter beds with an average of one acre each. The processes in operation at the new Walton works near Hampton Court are as follows :—

Water is taken in from the Thames and is passed to the storage reservoirs, one of which holds 718 million gallons. From this it goes through primary rapid sand filters, and afterwards is submitted to slow sand filtration. From these secondary filters it passes to a depôt where ammonium sulphate is added, and then it is chlorinated, the proportion being 0·2 part of chlorine per million. The water is then transmitted to the service reservoirs, where it awaits distribution to the houses.

The safety of the London water is ensured by taking a large number of routine samples for analysis, the figures for 1932 being :—

Chemical tests	4,677
Bacteriological samples tests	12,934
Total	17,611

The average daily consumption of water in London during 1932 was 281 million gallons, whilst the number of cases of enteric fever notified in 1932 was as low as 195, a very favourable figure when one considers that in 1900 it was 4292.

WATER-SUPPLY IN WAR

The battle of Messines was fought on June 7th, 1917, and Earl Haig pointed out in his despatch how important the problem of water-supply was in that battle. The development of the water-supply was carried out steadily through the winter of 1916 and the spring of 1917. In addition to the 8,000,000 gallons stored at Dickebusch and Zillabeke Lakes, 10 clay reservoirs were constructed along the Kemmel-Mont Rouge range of hills which ran east and west through the centre of the area, 180 miles of piping were laid, and pumping stations built which were capable of supplying 1,000,000 gallons of treated drinking water for the men and 500,000 gallons of untreated water for the horses per day.

In describing the battle Earl Haig states that pipe lines were taken well forward from the existing lakes, the Kemmel reservoirs, and the sterilising barges on the Lys. In addition to the piping, arrangements were made for the transport of water rations and stores by pack animals and carrying parties. So efficiently did these arrangements work out that during the attack water reached the troops within 20–40 minutes of the taking of new positions, and in one case parties arrived with packs, and dumps were formed within four minutes of the capture of the objective. The magnitude of the operations can be seen from the fact that 67 guns and 7200 prisoners were taken during the battle. The report on the work of the Royal Engineers in the war, pointing out that an adequate supply of water is of paramount importance in every phase of warfare, states : "Men can fight and continue to fight with shortage of ammunition, men and animals can subsist on a minimum quantity of food, but both will break down in a few hours and lose spirit, condition and power of resistance unless water is obtainable in sufficient quantities and of necessary purity. The purity of the water-supply in the war was ensured, when time allowed, by sedimentation and filtration through sand, followed by chlorination and removal of the excess of chlorine" (Official History of the War).

PURIFICATION OF WATER ON A SMALL SCALE

The usual methods are as follows : (*a*) *distillation*, (*b*) *boiling*, (*c*) *the addition of chemicals*. Half a teaspoonful of fresh bleaching powder is shaken up with a pint of water, and it is found that one teaspoonful of this solution will sterilise ten gallons of water in half an hour. (*d*) *Domestic filters*. The old-fashioned types of filter contained sponges, charcoal, sand, or spongy iron. They were useful when new in clarifying water and removing visible pollution, but they soon became foul, and as they were difficult to clean they became an actual danger by increasing the bacterial content. The modern filters are of the "porcelain-candle" type. In this category are the Berkefeld and Pasteur-Chamberland filters. These are slow but germ-proof, and should be cleaned every three days by the application of boiling water, by scrubbing, and occasionally by dry heat.

SWIMMING BATHS

Swimming is one of the best forms of exercise. It brings every muscle into action, inculcates cleanliness and self-respect, and, in addition, is valuable in life-saving. The water must of be high quality, free from pollution and harmful bacteria. Pollution may be due to :—

1. *Sources not derived from the persons of bathers.*—(*a*) The water may be already polluted at the intake. In 1908 Dr. R. J. Reece investigated 22 cases of typhoid at Walmer. The infection was traced to a sea-water swimming bath, where the intake pipe was 100 yards and 500 yards respectively from two outfall sewers. The water on filling the bath had the appearance of storm water in a London street after heavy rain. (*b*) The pool may be contaminated from surface drainage, fallen leaves, dead animals, and water birds. Green growths are, however, beneficial as they purify the water by oxygenation, and it has been found that in the L.C.C. ponds there was as much as 192 per cent. dissolved oxygen. The disadvantage of algæ in indoor baths is that they die and then have an offensive smell, and they also make the sides and steps slippery. They can be controlled by the addition of chloride of lime or copper sulphate.

(*c*) In addition to soot and dust which may be blown into the bath, the water may be contaminated by the boots of bathers or spectators. In order to avoid this, dressing boxes should open directly on to the bath and a door be provided on the side of the box away from the bath. Bathing costumes may be a source of pollution. 150,000 up to 1,000,000 bacteria per square inch have been found in them, whilst after proper washing with soap and afterwards rinsing the number has been diminished to 500 bacteria per square inch. Finally, towels may be a source of infection unless properly washed.

2. *Pollution derived from the persons of bathers*, i.e., from hair, cells from the skin, and from the mucous membrane, mucus, saliva, and urine.

3. *Bacterial pollution.*—The following organisms have been found in swimming bath water, *B. subtilis*, *B. prodigiosus*, *B. coli*, and, on one occasion, the *Streptococcus hæmolyticus*.

There is no doubt that *occasionally, though infrequently*, diseases are transmitted through infection by the water of swimming baths. As mentioned above typhoid fever may be spread in grossly polluted baths, but only two epidemics have been recorded. Conjunctivitis has been noted and also sinusitis, otitis, which is probably due to pressure of the water on the middle ear, and skin diseases such as ringworm, scabies, and pediculosis.

Methods of purification.—Formerly emptying and refilling the bath daily was recommended, but this was very expensive with regard to fuel and water, and has subsequently been found less efficient than the modern method of continuous filtration and chlorination, which must be in the charge of an intelligent man. The whole of the water in the bath should be passed through sand filters once every four hours, whilst the amount of chlorine added varies from 0·2 to 0·5 part per 1,000,000. Recently sterilisation by exposure of the water (after filtration) to ultra-violet rays is being tried. Hot and cold shower and foot baths should be provided, soap should be used, and easily accessible lavatory accommodation should be provided for both sexes.

CONCLUSION

It will be seen that in order to secure a pure water-supply effective supervision must be exercised. This includes (*a*) periodic survey of sources, gathering grounds, and catchment areas; (*b*) inspection of filtration, storage, distribution, and the conditions of cisterns in the house; and (*c*) periodic bacteriological and chemical examination. General practitioners are the first line of defence, and we depend on them for prompt notification in order to secure the earliest possible intimation that an epidemic is in being. Their influence is also a very valuable asset in the education of local councillors and of the public.

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POST-GRADUATE LECTURES

FOR the fourth week in succession we publish summaries of lectures delivered to post-graduates at the courses lately held or now in progress at London teaching hospitals. Dr. Pearson spoke at University College Hospital, Dr. Warner at Charing Cross, and Dr. Hunter at the London.

THE PREMATURE CHILD

(DR. W. J. PEARSON)

THE chief practical considerations which arise for the doctor in the case of the premature infant are (1) its management, (2) the feeding, and (3) the immediate and remote prognosis. All these questions demand some knowledge of the handicaps that accompany prematurity, and these must be constantly kept in mind.

To appreciate how unfortunate the accident of being premature may be, one must first realise the difficulties with which even the full-term have to contend on emerging from the protected uterine life. He has at somewhat short notice to obtain and digest his special food, to absorb oxygen by independent respiratory efforts, to maintain a reasonably even temperature, and to assume powers of excretion, in addition to protecting himself from various physical and chemical injuries, including the germs of infection.

The premature infant is handicapped at the start in several ways. The heat regulation, for more than one reason, is one of the most unstable functions, the body temperature showing marked fluctuations with a tendency to a low temperature. Respiration is impaired, for the respiratory muscles are weak and the chest is not properly expanded, which leads to atelectasis of the lung; as a result the blood is poorly oxygenated and there may be attacks of cyanosis, during which respiration may cease entirely; and in all cases it is superficial and irregular. As regards the digestive tract, suction is often weak, the appetite poor, and there is often great difficulty in getting these immature children to digest enough food to put on weight. The circulation is feeble and the blood-vessels so delicate that hæmorrhages readily occur, and it is apt to be a serious matter if the cerebral vessels are damaged at birth. Physical activity is at a minimum—partly because of the feeble condition of the muscles and circulation, but partly also because the nervous system is inadequately developed—so that the child tends to lie in a torpid state.

In the early stages, then, the chief dangers lie in the tendency to intracranial hæmorrhage, cyanosis, feeble respiration, and poor circulation, subnormal temperature with low vitality, and also in a somewhat unusually intense physiological jaundice. One must remember, too, how easily these small infants contract infection (pneumonia especially) and suffer from digestive upset, diarrhœa, and vomiting. The first diarrhœa of a premature infant should always be considered a dangerous symptom and treated accordingly.

From this it will be obvious how important are the prevention of infection, the ventilation of the room in which the child is, as well as the heating arrangements and careful handling and protection from noise and other forms of excessive nervous stimulation. Most prematures seem to do best when the body temperature is about 99·2° F.; it should not be allowed to go below 98° F. or above 100° F.

Premature infants lose relatively more weight in the early days and regain the birth weight more slowly than does the full-term child; in the latter the correction is made by the tenth to fourteenth day; in the former one is usually satisfied if this is accomplished in 21 days.

In most cases the early handicaps of prematurity are overcome and the children make good progress. Some are normal by the end of the first year; as a rule a normal standard in growth, weight, and mental

development is attained in the second to third year; some, however, develop rickets and anæmia and may bear the stamp of prematurity for years, this being shown in their delicate appearance and in a tendency to attacks of sickness and to nervousness.

In the details of management, though the main responsibility is taken by the nurse, intelligent supervision by the doctor is essential. [Here a film showing methods of feeding—by breast, by pipette, by Breck-feeder, by bottle, and by gavage or tube-feeding—was exhibited.] I would like to emphasise the importance of gauging the caloric requirements, of working up to these requirements slowly in most cases, of deciding from day to day the strength and amounts of feeds and the intervals of feeding, and if the child is on the breast, of making sure by test-feeds that underfeeding does not occur. The following is the kind of régime to be adopted in most cases:—

First 12 hours: Five per cent. glucose solution (½ to 1 oz.) to prevent much initial loss of weight from dehydration.

Second 12 hours: One to three feeds of breast milk.

After the first day: The baby should be placed to the breast for two or three minutes, three-hourly; extra water must be given between feeds.

In the smallest babies who are unable to suck ¼ to ½ oz. of breast milk and water, equal parts, can be given at first, increasing gradually one drachm at a time, until at the end of one or two weeks a 3 lb. infant will be getting three-hourly feeds of 1 to 1½ oz. of breast milk, the water being gradually reduced as the milk is increased, so that when one-sixth of the body-weight is given in food, very little extra water is necessary.

Feeding at intervals of three hours by day and two hours by night is our usual practice, but I think really that three-hourly feeds over the whole 24 hours is usually just as successful. If vomiting or loose stools occur it is better to feed less often—i.e., four-hourly—for a time. The amount given at a feed, of course, will depend on the age, weight, and feeding intervals, but it must be remembered that the caloric requirements of a small infant are high. It is estimated from 60 to 100 calories per lb. body-weight, which in terms of breast milk will mean about 2½ to 3½ oz. per lb. body-weight, but it is often weeks before the full requirements can be met. If breast milk is not available, choice can be made from sweetened condensed milk, a 1 per cent. fat and 1 per cent. casein dried milk, peptonised milk and water. In some other countries, notably America, many physicians regard protein milk as the most satisfactory. It has been little used, however, in this country, and the nearest approach to protein milk would be an acidified dried milk—half-cream or humanised.

RHEUMATIC DISEASE IN ADULTS

(DR. E. C. WARNER)

RHEUMATIC disease in adults is usually due to fibrositis or arthritis.

Fibrositis is often due to obscure causes, but chill is one of the most important. This was clearly shown in the case of metal workers by Glover, who found that those doing short spells of strenuous work, with free perspiration, and then stood about for periods of rest, often in draughts, were particularly liable. Infection from a septic focus is an aggravating factor, but its importance has been over-estimated in the past. Endocrine deficiencies, especially of the thyroid and posterior pituitary, may be important, particularly in later life, while general debilitating conditions, such as anæmia and fatigue states, should not be overlooked. The commonest examples occur either in the muscles themselves, around joints (often mistaken for arthritis), in connexion with nerves (neuro-fibrositis), or in the subcutaneous tissues (panniculitis). Common examples of these conditions are in lumbago, where the fibrous tissues of the muscles of the back, and often also the peri-articular spinal structures, are involved; in the occipital and suboccipital region, often labelled as headache on this account, and particularly when there is also a neuro-fibrositis of the great occipital nerve, causing the pain to spread to the vertex. We often find a capsulitis of the shoulder-joint labelled as an arthritis of the joint. Arthritis of the shoulder is a rare condition, and we should always think of a capsulitis when radiography of the joint shows little or no bony change, and yet there is pain and limitation of movement in all directions. The commonest example of panniculitis is across the shoulder regions, usually in obese subjects. The main points aiding diagnosis of fibrositis in the acute stages are pain on movement, often with local tenderness, aggravated when the structure is on the stretch (of great importance in diagnosing fibrositis of the abdominal wall from intra-abdominal disorders); and in the chronic stages tender nodules are often palpable.

The treatment of the acute stages of fibrositis resolves itself into relieving pain with rest aided by aspirin, perhaps with the addition of phenacetin or antipyrin (in doses of grs. 2 to each grs. 10 of aspirin), or even with codeine. Radiant heat, the infra-red rays, or the hot-water bottle, followed by light massage may be of real benefit, and sometimes counter-irritation is used. A dose of calomel is a wise addition. In the chronic stages, or else after the acute stage has passed, septic foci must be dealt with, the diet should be regulated, particularly avoiding large quantities of sugar, and adhesions may have to be broken down by manipulation.

Sciatica is one of the commonest forms of neuro-fibrositis. Often two types can be distinguished: that in which the parenchyma of the nerve is largely involved, with much muscular wasting and the loss of the ankle reflex; and the perineuritic form, where there is tenderness and pain along the course of the nerve, with pain on stretching, but with little muscular wasting and only slight diminution in the ankle reflex. This latter form often dates from a strain or other trauma. The treatment in the acute stages resolves itself into rest in bed, with the leg supported by sandbags and kept in position by a roller towel, or the use of the long Liston splint (usually resented by patients), or, in severe and intractable cases, by having a plaster cast made for the patient to lie in. Again the best drugs are aspirin, phenacetin, or antipyrin, and even codeine or tinct. opii. Dry heat in the form of radiant heat or infra-red rays, or antiphlogistine or moist heat with a linseed poultice, are greatly appreciated, as is light massage to relieve pain. In the subacute stages and in persistent cases the intraneural injections of saline, 1 per cent. novocain, or of oxygen, not only stretch adhesions but excite a mild temporary inflammatory reaction. Once the local tenderness along the nerve has gone, the inflammatory stage has passed, and gentle manipulations and exercises must be carried out. The persistence of pain on walking or on stretching the nerve is no criterion of active inflammation, but is equally present with neuritic and peri-neuritic adhesions. No manipulations should ever

be carried out without a preliminary X ray examination, which may reveal, for example, unsuspected secondary deposits; and once the manipulation has been done, within 24 hours active exercises to maintain the good result must be undertaken even at the expense of some pain on the part of the patient.

Chronic arthritic cases fall usually into one of six groups: infective, rheumatoid, osteo-arthritic, climacteric, gouty or neuropathic. Only the first four will be considered. Infective arthritis can occur in either sex and at any age in adults, and is usually due to a streptococcus (often the *viridans* group) or a gonococcus. The patient usually shows none of the prodromal or accompanying constitutional signs and symptoms met with in rheumatoid arthritis, such as loss of weight, anæmia, anorexia, &c., but may show some pyrexia. The joints involved are usually one or more of the larger joints (particularly with the streptococcus), such as the knees, ankles, elbows, or wrists, and symmetrical involvement of the smaller joints of the fingers is very rare. The joints contain fluid in the acute stages. Once the infective focus (usually in the teeth) has been dealt with, the joints rapidly recover, although if the foci are multiple a short course of autogenous vaccine is preferable to prevent evoking a severe reaction with wholesale extraction.

Rheumatoid arthritis is largely confined to women, between 20 and 45 years of age, and the worst cases are usually seen in the earlier period. Constitutional symptoms are almost invariable—pallor and secondary anæmia, anorexia, loss of weight, and tachycardia out of proportion to the temperature. The tachycardia is due to a raised basal metabolic rate in the acute cases, and in my series ranged from +15 to +20 per cent. In rheumatoid arthritis there is often a family tendency, and although septic foci may aggravate the condition, we are dealing with a disease which is primary metabolic in origin. The routine extraction of all teeth, whether they are normal or not, is not now countenanced or practised. The joints most typically involved are the smaller joints of the fingers and hands, often in a symmetrical manner, although the knees, ankles, elbows, wrists, and indeed almost any joint may be affected. In the early stages the main change is a peri-articular thickening, and the amount of fluid in the joints is much less than in the infective form. Treatment is first of the constitutional condition, and secondly of the joints. The first is often overlooked, but in my opinion is the more important. As Howitt pointed out, a diet of 20 calories per lb. of the normal body-weight per day should be prescribed, with an adequate amount of protein and plenty of animal fat. To overcome the diminished sugar tolerance, and to stimulate the appetite and recovery of weight, insulin in 5, 10, or 12 unit doses before the two chief meals is desirable in the worst cases; and as with hyperthyroid cases in general, nursing out of doors in a tent or chalet, which also stimulates the functions of the skin, is of real value. The anæmia may need treating with iron or even with blood transfusion. In the acute stages to prevent subluxation (due to the soft peri-articular structures, particularly of the knees and wrists) the joints need splinting at least for part of the day; and daily passive movement and massage will help to prevent adhesions forming. Later gentle manipulation may be desirable to increase the mobility of the joints, but forcible movement must not be practised, if only on account of the decalcification of the bones making fracture an easy matter.

In osteo-arthritis the main ætiological factors are a senile degeneration, with long-continued strain or trauma, and in some cases an aggravating septic focus. In many cases obesity is associated with the joint condition, and the relief of a stone or two of weight-bearing may make an enormous difference to the joint. To help this, thyroid may be given, and iodine by mouth is often of value. The local treatment consists in relieving strain (which is often due to flat-feet when the knees are involved), and adequate support with a crêpe bandage or an elastoplast bandage. Massage may increase the stability of the joint by toning up the muscles, and may help to relieve pain. Particularly in the lumbar spine we meet with osteo-arthritis. This is often a radiological change, and has been shown to be present in about 70 per cent. of people over the age of 50. In most of these cases some peri-arthritis of the invertebral joints is the real cause of the pain, and may even spread to the nerves in the intervertebral foramina, causing radiating pains in the trunk. Here manipulation after careful X ray examination may occasion remarkable improvement. Deep X rays may relieve pain in osteo-arthritis of the hips and spine, but they are very exhausting for elderly patients.

Climacteric arthritis in women of 40–55 years usually occurs in the obese; and especially in the knees, where tenderness on the inner side of the joints is most marked. In the very acute stages rest may be necessary, but later suitable weight reduction with thyroid or Elityran (Bayer), or even Lugol's iodine; and local massage to the knees and quadriceps may have to be persisted in to complete the cure.

OBESITY

(DR. DONALD HUNTER)

IT has often been said that the victims of obesity have a slow mentality and are lethargic; also that there is a peculiar connexion between obesity and financial crime. These generalities have no sound basis; indeed, it is possible to think of many extremely active fat persons both among one's own friends and the figures of history or public life, for example, Napoleon, Gibbon, and Chesterton. The victims of obesity are nevertheless to be pitied for many reasons. They must of necessity suffer from a restriction of physical activity, they have a tendency to develop flat-feet and arthritis, they also have an unpleasant tendency to excessive sweating, and they are difficult to anæsthetise, operate on, and nurse. Moreover, they are predisposed to diabetes, bronchitis, and possibly to hyperpiesia.

In making a diagnosis it is essential to differentiate such forms of obesity as are associated with organic lesions from those in which no organic lesion can be found. This latter group includes the vast majority of the cases of obesity. Experiments have recently been made by some French workers on the production of obesity, genital atrophy, and hypersomnia in animals by damaging the hypothalamic region of the brain. The onset of obesity has been noted in certain patients with encephalitis lethargica in whom the inflammatory process has involved the hypothalamus.

There are various other conditions which are associated with obesity and which must be excluded before the case may be considered as one of simple obesity. Patients with adiposity of the Fröhlich type have a large pudding face; their increased fat deposit has a feminine distribution; they

have broad hips, knock-knees, and delicate hands and feet, with tapering fingers and toes. A suprasellar cyst may present the syndrome of headache, progressive blindness, and adiposity. Eunuchism is associated with a moderate degree of obesity, as is suprarenal virilism. Cases of suprarenal tumour are commonest in children, and develop a marked sexual precocity of the male type, with excessive growth of hair fatness and great muscular development. The abnormal sexual development may disappear after removal of the growth, but unfortunately the tumours are extremely malignant, and the patient usually dies from secondary deposits in a short time. In the type of obesity associated with the name of Dercum there are localised painful areas of fat, atrophy of muscles with progressive weakness, and profound psychic disturbances.

As a rarity may be mentioned the type of case described by Cushing as pluriglandular disease, and associated either with a basophil adenoma of the pituitary body or with a carcinoma of the thymus (Leyton). In this disease the patient develops a fat florid face, obesity, and lilac striæ, especially over the abdomen. The obesity has a curious anterior distribution in the region of the breasts and abdomen. The gluteal region is wasted in comparison, and the limbs are long and thin.

Myxœdema presents a very characteristic clinical picture which once recognised is not easily forgotten. The patients are most commonly middle-aged women, who have gradually increased in weight; they have a slow mentality, an expressionless face with great puffiness under the eyes; their hair is scanty and dry, and the outer ends of the eyebrows are commonly absent. Their movements are slow, they feel the cold abnormally, they are anæmic, the pulse is slow, and the temperature subnormal.

The above conditions must be ruled out—it is highly likely that your patient will be suffering from uncomplicated obesity—in either case your next task is to master the patient's mind, and to convince him that all this fat went in by the mouth. The law of conservation of energy is applicable to the human body, fat or thin. Very many of these fat persons will swear that they are eating practically nothing. They are either lying or deceiving themselves. In advising them how to reduce their weight certain principles must be followed. Diet is of the greatest importance; exercise, massage, fluid restriction, and turkish baths are worthless. The patient must first be persuaded that his weight *can* be reduced by diet. There must be no departure from the diet nor any alteration in it. The diet must be inadequate in carbohydrate and fat but adequate in protein and vitamin content. It should contain at least one gramme of protein per kilogramme of body-weight. The ordinary activities of the patient should not be interfered with by the treatment, and thyroid should not be used except in myxœdema. The loss of weight to be aimed at should not exceed 2 lb. a week. In order to maintain body-weight a man of 75 kg. at complete rest needs about 1750 calories in 24 hours. If in active work he will need from 2500 to 5000 calories, depending on the nature of the work. Therefore a suitable reducing diet for a man who should weigh 75 kg. contains approximately 1100 calories, made up as follows:—

Protein	75 grammes	= 300 calories.
Carbohydrate ..	75 ,,	= 300 ,,
Fat	56 ,,	= 504 ,,
Total ..		1104 ,,

Such a diet, if adhered to, will inevitably produce a loss in body-weight.

At the end of Dr. Hunter's lecture Miss R. M. Simmonds, dietitian at the London Hospital, demonstrated by means of trays of food how the above diet prescription could be dispensed according to the individual taste of the patient and the length of his purse.

REDUCING DIET FOR PERSON OF 75 KG.

	CHO.	Pr.	Fat.
Breakfast			
Tea or coffee (milk 2½ oz.)	4	2	3
1 egg	6	5	
1 oz. bacon (1 thin rasher)	5	15	
Tomatoes, 4 oz. (2 good sized ones) ..	5	..	..
1 Vita-Weat biscuit	6	..	..
Butter, ¼ oz. (small pat)	..	6	
Grapefruit, 3½ oz. (½ a fruit)	5	..	..
	20	13	29
Lunch			
Melon (4 oz.)	10	..	..
Lean meat (2 oz.)	..	20	4
Salad (Lettuce (1½ oz.), Tomato (2 oz.), Cucumber (2½ oz.))	5	..	..
Jelly (½ oz. gelatin)	..	5	..
1 biscuit	6	..	..
	21	25	4
Tea			
Tea (milk 2½ oz.)	4	2	3
1 biscuit	6	..	..
Butter (¼ oz.)	..	..	6
	10	2	9
Dinner			
Clear soup	..	..	..
Fish (3 oz.)	..	10	2
Chicken, meat, or rabbit (2 oz.) ..	..	20	4
Spinach (3 oz.)	3	..	..
Marrow (4 oz.)	5	..	..
Apple (3 oz.)	10	..	..
Cheese (½ oz.)	..	5	2
1 biscuit	6	..	..
Butter (¼ oz.)	..	..	6
	24	35	14
Total calories = 1104.	75	75	56

Avoid sugar, cakes, pastries, puddings, jam, bread. motza (Jewish bread), potatoes, fried food, and rich sauces,

You may eat as much as you like of green vegetables, salad, and all fresh fruit except bananas.

She agreed that in mastering the mind of the obese it is important never to allow a patient to think that he is deceiving us successfully. It may be true that an obese woman eats less at regular meal times, but such persons owing to their obesity become ashamed to eat at meals, and their gain in weight comes from what they eat at the kitchen table or out of the cupboard. Articles so eaten include sugar, chocolates, biscuits, buns, and pastries. The cook and the chef are constantly tasting foods of high carbohydrate content, such as sauces, thick soups, and portions of pastry used for tarts and pie-crusts. Fat men cannot be accused of this kitchen cupboard method, except in the case of the pork butcher who all day long eats sausage meat stuffed with bread. The fat man eats too much carbohydrate at his meals, principally in

the form of bread, potato, and puddings. When he takes too much beer this acts as a carbohydrate sparer and is therefore a factor in the production of obesity. Miss Simmonds concluded by quoting figures of cases of obesity treated in every department of out-patients. In five years she had dispensed diet prescriptions and followed up their use in 626 cases. It was found that 522 patients were consistently obedient and lost weight regularly, while 104 were disobedient or attended insufficiently. No patient treated had felt hungry or in any other way dissatisfied with the diet. The average losses of weight were 20 lb. in three months and 28 lb. in six months. It was often possible after some months to add carbohydrate to the diet without the occurrence of further gain in weight.

PANEL AND CONTRACT PRACTICE

ANNUAL PANEL CONFERENCE

Dr. H. C. JONAS (Barnstaple) presided at the annual conference of representatives of local medical and panel committees, held in the Great Hall of B.M.A. House on Oct. 19th.

National Insurance Defence Trust

Dr. H. G. DAIN, as chairman of the trustees, outlined the work of the trust during the past year. The report, as he explained, shows that the trustees do not consider it necessary to define further the objects of the trust, which, broadly speaking, are to protect the interests of the medical profession in connexion with national health insurance. Last year the conference approved the policy of assisting aged and infirm practitioners against whom complaints had been made to retire from the service, and the trustees have considered and approved the first application under their new discretion.

Mr. N. BISHOP HARMAN, treasurer of the trust, gave a good account of its finances. He said that out of 129 English regions 15 had exceeded their subscription quota, while in Scotland 8 had earned that distinction out of 54—a higher proportion. Aberdeen has actually subscribed 138 per cent., and the treasurer declared that he would believe no further stories he heard about the financial attitude of its citizens.

Dr. R. G. CHASE (London) asked whether committees which made no contribution were able to claim the benefits of the fund, such as defence before the Medical Service Subcommittee and the expenses of sending a representative to the conference.—The chairman of the conference answered that it had been decided by previous conferences not to differentiate between districts which contributed and those which did not. Some committees which did not pay declined to profit from the fund.

Dr. J. H. BLETSOE (Essex) moved that the conference was opposed to "any further violation" of the objects of the trust, or any use of the funds for other objects than those originally intended.—Dr. DAIN entered a spirited protest against the motion, which came, he said, particularly unkindly from Essex, which had received £400 from the trust a few years before and had used it to establish one of the most successful public medical services in the country. No instances of violation by the trustees being specified, the conference, by a very large majority, agreed to pass to the next business.

Dr. T. P. LEIGHTON (Lancashire) moved to extend the assistance given to aged and infirm practitioners, and to provide also for practitioners whose means were straitened and who suffered from chronic ill-health.—Dr. DAIN opposed this suggestion on the ground that it was not desirable to turn the fund into a charity.—Dr. LEIGHTON replied that chronically ill practitioners were on exactly the same footing as the aged and infirm, but failed to convince the conference of the wisdom of extending the provision.

Dr. J. P. WILLIAMS introduced a motion to allow panel committees which had paid their quota to receive and expend the net income from their contribution. Lancashire proposed, for instance, he said, to subsidise holidays for practitioners who could not afford them. The central committee would in all cases be asked for permission.—Dr. C. R. LUNN (Warwickshire), though no supporter of bureaucratic government, found the motion impracticable. Nevertheless, he thought the trustees should consult the local panel committee before assisting an aged practitioner.—The motion was lost.

Some Current Problems

Dr. DAIN, as chairman of the Insurance Acts Committee, then moved the reception of the report of the committee on action taken during the year. At the last conference, he recalled, it had been resolved that the provision of a fee for anæsthetics should be left to the panel committees. The Ministry, however, had pointed out the difficulty that might arise if it were suggested in Parliament that, owing to the local committees not being required to pay a fee, insured persons were being deprived of facilities which they had previously enjoyed. The panel committee for London, the body most interested, had decided that the question ought not to be pressed at present, and the Minister had been notified accordingly. The Royal Commission on Unemployment had recommended that children should come on to the panel immediately on leaving school; this suggestion, he thought, would probably meet with the approval of insurance practitioners generally. The commission's other recommendation, that the income limit should be raised from £250 to £350 a year, would undoubtedly be opposed most vigorously, and the I.A.C. had taken an early opportunity of saying so.

The pension scheme, Dr. Dain announced, had been received favourably, and was regarded as one of the best pieces of business done by the I.A.C. in recent years. The maximum sum assured now amounted to nearly £1,300,000, and by the end of the year should have risen to £1,750,000. The response had been a surprise to the insurance companies, and was continuing.

It had been disclosed, said Dr. Dain, at the conference of the Association of Insurance Committees, that a number of doctors found themselves tied hand and foot and practically the paid servants of the moneylenders who had financed the purchase of their practice. This distressing state of affairs was largely unnecessary, as a number of insurance companies were prepared to advance money on reasonable terms.

In some insurance areas, Dr. Dain reminded the conference, the press had been able to obtain copies of the reports of medical service subcommittees before the meeting of the insurance committee to which they were reporting. The Ministry had agreed, he said, that such a practice was not fair and might

prejudice the practitioner's case, but the London committee still declined to alter its procedure, and the Ministry had said that it could not compel this committee to do so. The I.A.C. was prepared to support any action by London if it were found that a practitioner's interests were affected by the publication of these reports.

The Unemployed: Prolongation of Insurance

Dr. J. F. LAMBIE brought forward a strong motion by Glasgow that the conference viewed with the greatest misgiving the prospect of many insured persons losing their right to benefit at the end of the current year, and that the I.A.C. should be requested to continue its pressure on the Government to secure that these persons should receive medical treatment through insurance committees. He doubted whether practitioners in the South of England realised how important the matter was in the industrial districts of Western Scotland, with their high unemployment figure. At the beginning, he said, the Government had contributed two-ninths to the fund; it now only contributed one-seventh for men and one-fifth for women. If it would return to its original contribution, there would be no problem. Glasgow proposed that panel committees should be able to apply to the local authority to allow these persons choice of doctor under public assistance; also that the panel committees should be able to discuss remuneration with the local authorities.

Dr. DAIN replied that while the I.A.C. and all practitioners were anxious to keep these people on medical benefit and not lose contact with them, several essential factors must be regarded. If the Government had not reduced its contribution there would have been more money in the scheme, but these people would not have been entitled to it. If the scheme were to be kept intact as an insurance scheme, persons should only draw benefit if they paid premiums. Moreover, it was more appropriate that influence should be exerted on the Government by persons who were not financially interested. The I.A.C. would, of course, use any opportunities that occurred, and he understood that this was what the motion meant it to do.

Dr. H. J. CARDALE (London) agreed on the importance of retaining the integrity of the scheme. He considered that an arrangement might well be made between panel committees and local authorities, but declared that the motion did not violate the principle of insurance.

Dr. CHASE remarked that the Federation of Insurance Committees was strongly in favour of unemployed persons being kept on benefit. The National Association had resolved recently by a small majority that they should be retained, but did not feel nearly so strongly on the matter, and London representatives did not agree to their retention. The important point was where the money was to come from. The insurance committees, which had the records and the administrative equipment, were the proper bodies to carry on the work.

Dr. D. J. B. CANDLER-HOPE (Yorkshire, North Riding) pointed out that the cost would inevitably fall on the public assistance committees, and the question was merely how they were to raise it. Two categories of persons were affected; those absolutely without means, and those who would receive monetary but not medical benefit. The former only would come under the public assistance committee. In the industrial area of the North Riding a treatment society had been formed; the family paid a weekly contribution and any man who ceased to receive medical benefit could come into the scheme for a small additional subscription.

Dr. LAMBIE, in reply, retorted that the scheme could hardly be called a water-tight insurance scheme while three parties contributed and only one drew benefit; it should be administered with a latitude not applied to an ordinary society. He feared lest the profession, knowing it was financially interested, might say nothing at all. The Glasgow Members of Parliament, when approached on the matter, had taxed the committee with having remained silent in July when the Bill was still before the House, and having only moved when it had become the law of the land. The profession was surely entitled to voice its opinion that the status of the Act should be preserved.

The motion was carried by a large majority.

The Cut and the Capitation Fee

A number of committees had motions on the paper urging that the cut should be abolished and the basis of the capitation fee revised. Dr. DAIN, in moving that the appropriate paragraphs of the report be approved, said that the Government would not consider the restoration of the cut to single sections of the community. The I.A.C. had drawn up its case for revision of the capitation fee and the Minister had said that the question must be submitted to a board of arbitration, as it had before. Such a board would, said Dr. Dain, inevitably be biased by its knowledge of economic circumstances in other walks of life, and would not be able to treat the capitation fee on its merits. It would, in fact, not be acting fairly to the community in doing otherwise. The I.A.C. must therefore choose the right moment for convening a board, and that moment would not come until evidence of returning prosperity was more substantial than at present.

Dr. J. TAYLOR (Banff) moved that the time had arrived when the 10 per cent. deduction, voluntarily accepted in 1931, was not now justified and should cease; also that action taken to this end should have preference over the reconsideration of the capitation fee. He pointed out that a bridge-player did his utmost to fulfil his contract and also to take one or two additional tricks. Similarly, the panel doctor aimed continually to go beyond his contract and give extra services to his patients. Whereas, however, the bridge-player scored points both for contract and for extra tricks, the doctor was paid for his contract less 10 per cent. and for his extra services got nothing, and the Ministry did not consider it expedient to discuss the question. In playing the final hand with the Minister the chairman of the I.A.C. would have to defeat several sinister cards which the Minister had up his sleeve, such as the national crisis, the May report, and the pressure of approved societies. He would find his two long suits, work well done and public opinion, more valuable even than skill and judgment.

Dr. LUNN, whose division had put forward a similar motion, spoke of the hardship of the cut to small practitioners, many of whom it had deprived of a holiday. Local authorities had restored the cut, and the panel had an even stronger case.—Dr. C. F. TURNER (Coventry) added that doctors were also doing much more charitable work than they had done. —The motion was carried unanimously.

Dr. A. BEAUCHAMP (Birmingham) took the matter a step further by moving that the restoration of the cut should be given priority over any relief of direct

taxation, and this suggestion also found the approval of a large majority, as did a warning by Dr. E. A. GREGG (London) that all bodies which had been subject to cuts should combine in an approach to the Government in order that each might not be told that it could not be considered separately.

The conference agreed with one half of a motion by Essex that the present capitation fee of 9*s*. was inadequate, and consented to the withdrawal of the second half, which directed the I.A.C. to call on the Minister to increase the capitation fee at the beginning of next year. It also agreed to a motion by Glasgow that the claim to a revision of the fee was endangered by the practice of accepting contract rates from local authorities on a lower basis.

Other Matters

The conference agreed with the settlement reached between the I.A.C. and the Minister concerning insured persons who have just been examined by a regional medical officer. If an unemployed patient is passed as fit for work he cannot draw sickness benefit but he is also deprived of unemployment benefit, because he is not registered at the labour exchange as available for work. Patients are in future to be told, by the addition of a sentence to the notification form, that their doctor will receive a report on the following morning, and that they should see him as soon as possible.—Dr. DAIN did his best to convince Middlesbrough that this arrangement does not mean that the panel doctor must always agree with the R.M.O., and to persuade Carmarthenshire that it was not the duty of the R.M.O. to inform the patient direct or, in the alternative, to go on paying him benefit until his next visit to the doctor—from what fund did not appear in the motion. The conference agreed that these committees had not fully understood the position, and rejected their proposals.

The I.A.C. does not see eye to eye with those committees who wish for more medical representation on insurance committees, holding that the personal influence of a known and trusted individual doctor is much more important than the votes of two or three little-known medical members. Dr. CARDALE proposed to appoint deputies to act when the regular member was absent, on the principle that half a loaf is better than no bread at all and that the opinion of any medical man on a medical question carries considerable weight with a lay committee. The conference agreed with his arguments, but also endorsed the general principle expressed by the I.A.C.

Considerable opposition was shown to the "collective own arrangers" scheme, by which the staffs of institutions are placed on the panel of the institution's medical officers.—Banffshire's objection was that free choice of doctor was not allowed, and that insured persons could not obtain medical benefit when absent from the institution. Dr. TAYLOR, who moved that these schemes should cease, declared that the practitioners' fund was being raided for the benefit of the public health and public assistance committees of local authorities.—Dr. R. A. WALKER and Dr. M. W. RENTON, from Kent, spoke vigorously against an alleged abuse by which members of an institution staff, though nominally insured, are said to receive no treatment from their own medical officers, while the doctor whom they attend as private patients is not entitled to claim remuneration.—Dr. DAIN pointed out that if the experienced medical politicians of Kent had chosen to take action at any time they could have had such irregularities remedied under the ordinary disciplinary regulations. In answer to a point made by Dr. J. J. DAY (I.A.C.), who also practises in Kent, he remarked that it was a necessary condition of the contract between the local authority and the member of the staff of an institution that he should be on the institution panel; the question of canvassing did not therefore arise. A medical officer who was precluded from visiting outside the institution was not entitled to have outside persons on his panel. The I.A.C. would investigate the position of an insured person who fell ill and was told to go home from the institution. The Banffshire motion was carried by a large majority.

The conference agreed to a motion by London that a pregnant woman should be entitled to an antenatal benefit for a period up to eight weeks before her confinement, and that she should not also receive sickness benefit.

Dr. A. J. LEWIS (Southport) moved that the I.A.C. should be asked to take any possible steps to enable insurance practitioners to claim fees for services they have given to insured persons injured in motor accidents who can claim compensation from the motorist responsible.—Dr. DAIN replied that if the patient insisted on being treated as a private patient the doctor was probably entitled to claim a fee. The position might be anomalous if insurance practitioners demanded payment for an injury caused to an insured person in one particular way and not in any others. The problem was a national one and far wider than insurance practice. To press the matter might well prejudice negotiations concerning capitation fee. The suggestion was referred to the I.A.C. for consideration.

At the conclusion of the conference Dr. Jonas was re-elected chairman for next year.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICES

Surg. Lt. J. E. Davenport, R.N.V.R., to be Surg. Lt.

J. G. M. Nisbett to be Surg. Lt.

The following appointments are notified: Surg. Comdr. J. C. Kelly to *President* for R.A.F. Medical Officers' Course.

Surg. Lts. F. W. Besley to *Bryony*, C. J. Waring to *Furious*, J. M. T. Reese to *Victory* for R.N.B., and to *Iron Duke*, and G. A. Lawson to *Herald*.

ROYAL NAVAL VOLUNTEER RESERVE

Proby. Surg. Sub-Lt. C. M. Lamont to be Surg. Sub-Lt.

ARMY MEDICAL SERVICES

Lt.-Col. and Bt. Col. J. W. L. Scott, R.A.M.C., to be Asst. Dir.-Gen., A. Med. Servs., War Office.

ROYAL ARMY MEDICAL CORPS

Maj. A. G. Biggam from the secd. list is restd. to the estabt.

Capts. H. F. W. Adams, F. J. Lidderdale, and D. S. Jones to be Majs.

TERRITORIAL ARMY

Lts. D. G. Robinson and E. J. Fitzgerald to be Capts.

Supernumerary for Service with the O.T.C.—A. G. D. Whyte (late Cadet Staff Serjt., Aberdeen Univ. Contgt., Sen. Div., O.T.C.) to be Lt. with seniority for duty the Med. Unit of the Aberdeen Univ. Contgt., Sen. Div., O.T.C.

ROYAL AIR FORCE

Flying Officer F. I. G. Tweedie is promoted to the rank of Flight Lt.

LONDON HOMŒOPATHIC HOSPITAL.—Major E. A. Attwood retires from the secretaryship of this hospital on Oct. 31st after 50 years of continuous service.

SPECIAL ARTICLES

SICK ABSENCE DUE TO CERTAIN CONDITIONS

BY H. V. PRYNNE, C.B.E., D.S.O., F.R.C.S. ENG.
CHIEF MEDICAL OFFICER TO THE POST OFFICE

THE estimation of the results of a method of treatment is notoriously difficult, and the "follow-up" of cases often furnishes very inconclusive evidence as regards the after-health of the patient. On the one hand the patient often minimises any remaining disability out of gratitude to the physician or surgeon who has spent his time and skill in efforts to effect a cure, while on the other the investigator often finds it difficult to allot cases with accuracy to the customary categories such as "cured," "improved," and so forth. Some objective standard is necessary and sick absenteeism appears the most suitable criterion by which to assess the effects of treatment.

The Post Office has special facilities for obtaining accurate information of this nature. The number of staff employed falls little short of a quarter of a million, and in the case of established staff every day of sick absence is recorded, whereas the first three days of absence are not included in the statistics of the National Health Insurance. Only disabilities which exhibit unequivocal objective evidence, such as is found on laboratory research or in the course of operative treatment, are suitable for an investigation of this character. Conditions described in broad terms like rheumatism and gastritis, where the diagnosis is based on subjective symptoms, are not capable of accurate analysis, since the cause is variable and errors of diagnosis are frequent.

In this investigation the initial absence for a disability, or period during which an operation was performed, have been excluded from consideration.

Gastric and Duodenal Ulcer

The following figures show the sick absence for disorders of the digestive system alone. The disorders include gastro-enteritis, gastritis and dyspepsia, gastric and duodenal ulcer, enteritis, and diarrhœa. The average sick absence for these conditions incurred throughout the staff amounted to 0·917 of a day per year per employee. One group of 197 cases of gastric and duodenal ulcer was examined in 1923 with the result show in Table I.

TABLE I

	Cases.	Total years covered.	Sick absence.*
Gastric ulcer—			
With operation	25	113	12·1
Without operation	106	595	13
Duodenal ulcer—			
With operation	12	62	20·3
Without operation	54	305	16·1

* In this and other tables and in the text "sick absence" denotes average number of days away from work per year per employee, owing to the type of disorder under discussion—in the case of Table I., digestive disorder.

Operation cases.—Investigation of a further series of gastric and duodenal ulcer cases where operation had been performed was recently made: 146 records were examined; the total years covered was 838, and after operation the average sick-rate per year per employee for disorder of the digestive system was 15·6 days.

This group of 146 cases was subjected to further examination as regards sick absence after operation of a particular nature, and the result was as given in Table II.

TABLE II

	Cases.	Total years covered.	Sick absence.*
Gastro-enterostomy	88	589	12·2
Suture	43	192	22
Excision	15	57	28·7

The prospects of recovery after operation was next investigated in accordance with the following scale:—

(*a*) The minimum period of service after operation has been taken as four years.

(*b*) "Recovered" cases are regarded as those who have not exceeded one day sick absence for digestive disorder per year (the average sick-rate for digestive disorder is approximately one day per year per employee).

(*c*) "Improved" cases are regarded as those who have not exceeded ten days for digestive disorder per year.

(*d*) "Not improved" are regarded as those who have exceeded ten days for digestive disorder per year.

The result is given in Table III.

TABLE III

Nature of operation.	Cases which have completed 4 years' service.	Recovered.	Improved.	Not improved.
Gastro-enterostomy	68	23	24	21
Suture	20	4	1	15
Excision	7	2	1	4

The figures in Table IV. show sick absence for all conditions in days per year per employee of a group of 684 operation and non-operation cases, the average sick-rate for all employees being between 10 and 12 days.

TABLE IV

	Cases.	Years of service covered.	Sick absence.*
Gastric ulcer—			
Male (with operation)	113	550	41·78
Female (with operation)	7	53	48·24
Male (no operation)	175	919	27·27
Female (no operation)	41	349	24·42
Duodenal ulcer—			
Male (with operation)	176	885	40·53
Female (with operation)	3	17	43·47
Male (no operation)	155	896	25·36
Female (no operation)	14	110	32·63

Any absence due to operative treatment for ulcer is included in the figures.

The effect of *alkaline treatment* of cases not operated on was also investigated: 128 records were examined; the total years covered was 359 and the average sick-rate per year per employee for disorder of the digestive system was 17·6 days, excluding the absence during which the treatment commenced. A large number of the patients were reported to have undergone a definite course of treatment from the commencement of the illness varying from a month to several years, the average duration being eight months. This group consisted of 89 cases, the total years

covered was 235 and the average sick-rate for disorder of the digestive system was 11·9 days per year per officer. In the remaining 39 cases treatment was described as "intermittent," "occasional," &c. The number of years covered in this group was 124, and the average sick-rate for disorder of the digestive system was 28·4 days per year per officer. Of the total of 128 patients, 40 have remained entirely free from sick absence on account of digestive disorder since their resumption of duty following the absence during which alkaline treatment commenced, and the periods for which they have remained free are given in Table V.

TABLE V

Alkaline treatment.	Definite course cases.	Intermittent treatment cases.
Under 1 year	19 ..	4
Between 1 and 2 years	6 ..	1
,, 2 ,, 3 ,, ...	6 ..	Nil.
,, 3 ,, 4 ,, ...	1 ..	1
,, 4 ,, 5 ,, ...	1 ..	Nil.
,, 5 ,, 6 ,, ...	1 ..	Nil.

Exophthalmic Goitre

Records of 112 cases were reviewed. The total years covered was 527 and the average sick-rate for all conditions per year per officer was 27·8 days, of which 11·4 were due to recurrence of exophthalmic goitre and 3 were due to nervous and heart symptoms, probably associated with the condition of exophthalmic goitre.

Of the total of 112 patients 46 have had no recurrence of the condition since their resumption of duty and the periods for which they have remained free are as follows :—

Under 1 year ..	16	Between—	
Between—		5 and 6 years ..	1
1 and 2 years ..	9	8 ,, 9 ,, ..	3
2 ,, 3 ,, ..	2	10 ,, 11 ,, ..	3
3 ,, 4 ,, ..	6	14 ,, 15 ,, ..	2
4 ,, 5 ,, ..	3	19 ,, 20 ,, ..	1

The average sick-rate for all conditions of the remaining 66 during a total period of 350 years was 36 days per year per officer.

Seventeen cases in which thyroidectomy was performed were examined. The total years covered was 44 and the average sick-rate for all conditions per year per officer was 28·5 days, of which 11·6 were due to recurrence of exophthalmic goitre and 5·4 to nervous and heart symptoms probably associated with the condition of exophthalmic goitre. Of the 17 cases 12 have had no recurrence of the condition since their resumption of duty, and the periods for which they have remained free are as follows :—

Under 1 year ..	1	Between—	
Between—		3 and 4 years ..	2
1 and 2 years ..	3	4 ,, 5 ,, ..	1
2 ,, 3 ,, ..	4	9 ,, 10 ,, ..	1

Diabetes

The number of cases reviewed was 37. The total period covered was 143¾ years and the average sick-rate for all conditions per year per officer was 27 days, of which 21·3 days were due to diabetes.

TABLE VI

Age.	Cases.	Total years covered.	Sick absence. All conditions.	Sick absence. Diabetes.
20–30	12 ..	55 ..	25·7 ..	19·4
30–40	7 ..	30½ ..	31·3 ..	27·5
40–50	12 ..	43 ..	32·5 ..	25·5
50–60	6 ..	15¼ ..	7·6 ..	3·6

Table VI. shows the sick absence of the 37 patients divided into groups according to the age of the officer at the commencement of the illness.

Of the 37 patients 12 remained entirely free from sick absence on account of diabetes after resumption of duty following the initial sick absence, and the periods for which they have remained free are as follows :—

Under 1 year ..	3	Between—	
Between—		3 and 4 years ..	1
1 and 2 years ..	4	4 ,, 5 ,, ..	1
2 ,, 3 ,, ..	2	8 ,, 9 ,, ..	1

All the patients commenced insulin treatment, and with three exceptions this was continued to date, or to date of leaving duty in the case of those who died or retired. Of the exceptions, two retired on account of age after very little sick absence within four years of the onset of the condition. The other had a small supply of insulin for approximately 12 months only after resumption of duty. His sick record for four and a half years has been good.

Notwithstanding insulin treatment, 5 of the 37 died or retired on account of diabetes within the following periods :—

Between—		Between—	
2 and 3 years ..	2	4 and 5 years ..	1
3 ,, 4 ,, ..	1	5 ,, 6 ,, ..	1

Renal Calculus

The average sick absence per male employee for renal calculus and hæmaturia in one year was 0·06 of a day.

The number of cases reviewed was 51, and the average sick absence divided into operation and non-operation cases is shown in Table VII.

TABLE VII

	Cases.	Total years covered.	Sick absence. All conditions.	Sick absence. Renal calculus.
Operation cases ..	29 ..	151½ ..	27·3 ..	17·7
Non-operation cases	22 ..	96 ..	25·1 ..	11·3

The sick absence for renal calculus is included in that shown under "all conditions."

Since resumption of duty 14 operation cases and 4 non-operation cases have remained free from sick absence on account of renal calculus, and the periods for which they have remained free are as follows :—

	Op.	Non-op.		Op.	Non-op.
Under 1 year	5 ..	1	Between—		
Between—			4 and 5 yrs.	2 ..	1
1 and 2 yrs.	1 ..	—	5 ,, 6 ,,	— ..	1
2 ,, 3 ,,	1 ..	1	6 ,, 7 ,,	1 ..	—
3 ,, 4 ,,	2 ..	—	10 ,, 11 ,,	2 ..	—

Eight operation cases and two non-operation cases subsequently died or were retired on account of kidney trouble within the periods shown.

	Op.	Non-op.		Op.	Non-op.
Under 1 year	1 ..	—	Between—		
Between—			7 and 8 yrs.	1 ..	—
1 and 2 yrs.	— ..	2	8 ,, 9 ,,	1 ..	—
3 ,, 4 ,,	1 ..	—	11 ,, 12 ,,	2 ..	—
4 ,, 5 ,,	1 ..	—	25 ,, 26 ,,	1 ..	—

Empyema

The number of cases reviewed was 17. The total years covered was 91⅔ and the average sick absence for respiratory conditions alone was 13 days.

Of the 17 patients 5 have been free from sick absence on account of respiratory conditions since resumption of duty following the absence due to

empyema, and the periods for which they have remained free are as follows :—

Under 1 year	1*	Between—	
Between—		3 and 4 years ..	2
2 and 3 years ..	1	5 ,, 6 ,, ..	1

* Officer resigned.

In addition, except for a short absence on account of a respiratory disorder soon after resumption of duty, one officer has been free from sick absence on account of such conditions for ten years. Three patients died within three years of resumption of duty on account of respiratory conditions. In addition to the 17 patients who resumed duty it was found that 6 had died or retired during the initial absence. Excluding the one officer who resigned, the total number of cases of empyema reviewed was therefore 22 and the summary of the effect of the condition is as follows :—

Died or retired during initial absence	6
,, ,, within 3 years	3
No ill-effects	5
Still serving, but incurred an average sick-rate of 12·1 days per year per officer for respiratory conditions	8

Semilunar Cartilage Injury

The effect of operation on the knee as regards sick absence was investigated.

Conservative treatment.—The number of non-operation cases reviewed was 43 and the total years covered was 109 ; 24 cases incurred further sick absence on account of the old injury, and the average sick absence due to that cause was 7·1 days. In addition, 3 patients incurred sick absence due to further accidents to the same knee ; 16 cases incurred no sick absence due to the knee for a total period of 34½ years.

The summary of the results of the condition is as follows :—

Incurred further sick absence due to old injury ..	24
,, sick absence due to further accidents to the knee	3
,, no further sick absence due to old injury ..	16

A number of these cases were subsequently operated on but the sick absence caused thereby, and also the sick absence caused by the original injury, have been excluded.

Operative treatment.—The following 42 cases of operation reviewed covers many of those included in the previous statement after operation was performed, but the sick absence caused by the operation in these and also all other cases has been excluded.

For the 42 patients the total number of years covered was 123. Five cases only incurred further sick absence on account of the condition of the knee, and the average sick absence due to that cause per year per officer (including all the 42 cases) was 0·18 of a day. In addition, 5 cases incurred sick absence on account of further accidents to the knee.

The summary of the results of the operation is as follows :—

Incurred further sick absence due to the condition	5 (11·9%)
,, sick absence due to further accidents to the knee	5 (11·9%)
,, no further sick absence due to the knee	32 (76·2%)

My thanks are due to the editor of *Industrial Welfare and Personnel Management* for permission to use certain of the figures which appeared in his journal as part of a paper which I read before the advisory medical committee of the Industrial Welfare Society.

MEDICINE AND THE LAW

The Dating of Industrial Disease

THE law courts sometimes inquire exactly when a patient's disease began. How far can medical evidence answer ? Doctors can tell the court that on a certain date they found no trace of disease, but on a later date observed symptoms of it in an early or advanced stage ; knowledge of the cause and progress of the disease in other cases and information of the patient's history and occupation may enable them to estimate the disease to have reached a definite stage at some previous date. Questions of this kind arose in recent workmen's compensation proceedings (R. Smith and Son *v.* Eagle Star &c. Insurance Co.). The plaintiffs, a firm of file cutters at Wolverhampton, insured their men against the usual industrial risks. The policy covered liability for personal injury or disease, fatal or non-fatal, "which during the continuance of the policy shall be sustained or contracted by any workman while in the employers' direct control." A man named Hill, a file cutter for over 20 years, entered Smiths' employment in March, 1928. The dates are material. He worked for them as a file cutter until June 16th, 1930 ; they then put him to other work till Oct. 31st, 1931, when he left them and became unemployed. On Dec. 30th, 1932, he was examined by the Silicosis Board and was certified as totally disabled by silicosis and tuberculosis. The certificate gave the date of the total disablement as July 18th, 1932. Smith and Son being his last employers, Hill claimed compensation from them and they paid him 30*s.* a week. The insurance policy however had lapsed on June 16th, 1930, before the date of the total disability. The insurance company declined to indemnify the employers for the payments to Hill ; it argued that it was liable only for events occurring "during the continuance of the policy" and not for something which happened more than two years after the policy lapsed. The dispute went to arbitration. The arbitrator held that Hill had contracted the disease before the policy lapsed. The disease, he said, was a gradual one, and nobody could tell exactly when it began ; Hill's work with Smith and Son had contributed to his disease, but, as the man had been a file cutter for many years previously, it was not possible to say that he first contracted the disease while in Smiths' employ. The arbitrator therefore decided that the employers' claim on the insurance policy failed. The employers appealed to the High Court where Mr. Justice Roche reversed the arbitrator's decision. Applying his experience in the interpretation of commercial documents, the judge ruled that the word "contracted" in the policy did not necessarily mean "first contracted," but would cover the gradual process of silicosis. The judge said the insurance company must pay in view of two facts found by the arbitrator —namely, that Hill's disease (*a*) was contracted before he left Smiths' employment, and (*b*) was contributed to by that employment.

The Workmen's Compensation Act makes employers insure their men against industrial accidents. It also treats certain industrial diseases as accidents, imposing liability upon the employers for whom the workman has worked during the 12 months prior to his disablement by the disease. The certified date of Hill's disablement brought him within the statutory 12 months. There was thus no doubt that Hill was entitled to compensation, but, in the circumstances

of the policy, there was a doubt as to who should find the money.

A Witness's Ordeal

A cheerful turn was given to a criminal trial last week at the Central Criminal Court. A motorist was being tried on the charge of having been under the influence of drink while driving his car. A medical witness, called by the prosecution, gave evidence that he had applied the Romberg test, asking the defendant to stand with his feet together and his eyes shut. The learned recorder asked the witness if he could himself pass the test without swaying. The witness thereupon left the box and gave a demonstration. He put his feet together, closed his eyes and stood for some ten seconds. The recorder said he noticed a distinct sway. The evidence against the accused was presumably not otherwise strong and the jury stopped the case and acquitted him. The confusion of an expert is never an unpopular phenomenon in a court of law, and medical witnesses who mention the Romberg test must for the present expect to be invited to apply it to themselves.

ROYAL COLLEGE OF PHYSICIANS OF LONDON: THE HARVEIAN DINNER

THE annual Harveian Commemoration Dinner was held at the College on St. Luke's Day, Oct. 18th, when Lord Dawson of Penn, as president, received a representative series of guests. In submitting the toast of the memory of William Harvey he pointed out that the great discovery of the circulation of the blood was a milestone in the history of medicine, for it marked the introduction into the study of medicine of scientific methods. He referred eloquently to the increasing manner in which medicine was entering into all departments of social life, in testimony of which he pointed to the distinguished representatives of different State services and Government departments who were present round the table. He coupled with the toast the names of Sir Austen Chamberlain and the Dean of St. Paul's. Referring to the former's distinguished career he said how valuable to the cause of medicine it was that Sir Austen should now be closely associated both with the London School of Hygiene and Tropical Medicine and the new London Post-graduate Centre. He spoke warmly of the medical philosophy which distinguished the writings of Dean Inge, and reminded the audience that in past times the Dean of St. Paul's had had a very intimate association with medicine. The famous Dean Colet had, even after the foundation of the College of Physicians, the duty of examining all aspirants to practise medicine within seven miles of the centre of London, and of finding them fit or otherwise for their duties. Dean Colet, he added, had left on record a low opinion of the merits of some of the candidates, and Lord Dawson suggested that some present who had discharged the function of examiner would recall similar cases to-day.

Sir Austen Chamberlain, in reply, made no close reference to contemporary politics other than to suggest that the body politic appeared to be the victim of attacks of recurrent fever, which had not yielded so far to remedial or sedative treatment. But he looked forward, he said, to better results, being quite hopeful of the state of the patient. The solution of present difficulties would be found in the spread of truth and the growth of accurate knowledge of the conditions and circumstances leading up to present conditions, but patience as well as judgment would be required before the febrile manifestations would disappear. He alluded to his famous father's deep interest in the health of our colonial subjects, which had led him to be a pioneer supporter of the researches now going on in tropical disease, and he spoke with confidence of the great results which must follow from the foundation in London of a representative post-graduate centre.

Dean Inge, having also briefly replied, Sir Charlton Briscoe proposed the health of the Harveian Orator, a duty which he said always devolved upon the senior censor of the College. He congratulated Sir Thomas Lewis on the learning displayed in his forcible plea for proper opportunities for the study of physiology.

Sir Thomas Lewis in response was humorous in his description of the difficulty which the clinical observer had to obtain from the patient direct answers to even simple inquiries.

Sir StClair Thomson then asked permission to present an "antimonyall cuppe" of the seventeenth century to the College. Displaying the cup, a small chalice made of antimony, he said that only one or two of these cups were now known to be in existence, and he explained their medicinal use. The antimonial cup derived its therapeutic properties, he said, from the fact that if white wine was left standing within it for a time a sufficient dose of antimony was absorbed to produce an emetic draught. He apologised for alluding to the process of vomiting, but he would remind his hearers that classical records showed that vomiting was self-induced by fashionable Romans in the days of Nero as a relief to surfeit, the gourmand being able to go on eating after emesis. The cups were said to be frequently met with in monasteries.

Among the guests present, in addition to Sir Austen Chamberlain, were the Hon. G. Howard Ferguson, High Commissioner for Canada; Lord Cromer, Lord Chamberlain; F.M. Lord Milne; Sir William Llewellyn, P.R.A.; Lord Trenchard, Marshal R.A.F. and Commissioner of Metropolitan Police; Sir Patrick Duff, Permanent Secretary to the Office of Works; Sir Holburt Waring, P.R.C.S.; Sir George Newman, Chief M.O. to the Ministry of Health; Sir Frederick Menzies, M.O. to the L.C.C.; Very Rev. Dean Inge; Lord Camrose; and the Editors of the *British Medical Journal* and *The Lancet*.

VIENNA

(FROM OUR OWN CORRESPONDENT)

MEETING OF THE ALPENLÄNDISCHER ÄRZTEVEREIN

TWELVE years ago medical men working in the Austrian alps formed a medical society of their own, and held their first meeting at Innsbruck. This society, which has flourished and gained prestige in German-speaking Central Europe, holds regular meetings once or twice a year. This year it met in Baden, near Vienna, about 400 members attending. The three main subjects discussed were: (1) diseases and injuries of the pancreas; (2) Bang's *Brucella abortus* infection in man; and (3) miscarriages, natural and induced. Each subject was presented from the clinical, surgical, medical, and pathological aspect. *Br. abortus* infections were discussed by Dr. Lauda, of Vienna, on the clinical side, by Prof. Russ on the serological and bacteriological side, while Prof. Schnürer spoke from the standpoint of the veterinary surgeon. It is worthy of note that

the Austrian Ministry of Health has found it necessary to issue a circular to the profession, especially in the country districts, outlining the diagnosis and therapeutics of this disease. At the same time an inquiry has been organised to obtain exact data of its frequency amongst cattle and other domestic animals in the republic. It appears that of late a distinct increase of epidemic outbreaks, both amongst human and animal victims, has been noted here. Much attention was also paid to the papers dealing with miscarriages, especially to the lecture by Prof. Stiglbauer (Vienna) on the social and hygienic aspects and eugenic importance of miscarriages. He gave exact data collected in the course of an extensive investigation conducted on behalf of the Ministry of Health into this problem. Statistics on cases of artificially induced miscarriage admitted to a number of State hospitals in the larger provincial towns are available for the last five years. In these institutions, which serve about 10 per cent. of the entire population, there were about 7000 cases of abortion every year. Considering these figures and taking into consideration also the ratio of natural abortion to normal delivery, Prof. Stiglbauer estimates the number of cases of abortion in Austria per year as 100,000, with a mortality between 1 to 2 per cent. In the discussion following this paper, Prof. Zacherl (Innsbruck) laid stress on the frequent sequelæ of miscarriages, especially sterility. Incidentally, there was no agreement on the best methods of procuring abortion, or even on the purely eugenic indications for inducing it. The recent German jurisdiction on eugenic lines did not meet with much approval at the congress. Abdominal surgery, chiefly that of the pancreatic gland, received much attention on the part of the surgeons. The leading professors of the Vienna and the Graz University clinics (Prof. Denk and Prof. Walzel), both high authorities on this subject, introduced and discussed modern views on the pathology and physiology of the gland, and were followed by pathologists and physicians. A large number of papers were also presented on septicæmia, thrombophlebitis and embolism in gynæcology and obstetrics, diphtheria and other epidemics in children, rheumatism, and meningitis.

PROFESSIONAL SECRECY

In the last two quarterly issues of the official *Aerztekammerblatt* of Vienna the problem of professional secrecy is discussed by Dr. Brecher, following on a certain incident. In the course of legal proceedings in respect of income-tax, a physician was asked by the court to give details of the names of his patients, and the fees he received from them. He stoutly refused to disclose the names, and legal proceedings were stopped pending clarification of this problem by decision of the supreme court. According to some Austrian law experts, only the police and the court in a criminal case may demand information from the doctor, and at their request he is bound by law to break professional secrecy. He may not be subpœnaed or otherwise forced to disclose names of patients and so forth in cases of private litigation or in civil actions. Other law experts hold that the term "professional secrecy" covers only diseases and information which come to the doctor's knowledge in his capacity as medical adviser. In several circulars and memoranda issued on various occasions by representative bodies of the profession, the doctor has been advised to adhere strictly to professional secrecy, even to his "personal discomfiture." In a judgment of the Austrian administrative high court, given in May, 1931, in a case involving income-tax, the doctor was told simply to state the number of his patients and the amount of fees received, and allowed to withhold their names on grounds that even "the fact that a certain person has consulted, say, a dermatologist or a gynæcologist or an aurist, may be detrimental to this person if it should become known publicly, as is possible when his consultations are noted in a court." The Austrian profession, unlike the German, is still bound absolutely to professional secrecy unless called upon to give evidence in criminal cases.

RESTRICTION OF CLINICS

Owing to financial pressure the Ministry of Instruction has decided to close down some of the institutions of the University. Two clinics fall victims to these budget difficulties: the second gynæcological clinic, to which Prof. Halban was appointed a year ago, has been closed, the work being transferred to the first surgical clinic under Prof. Denk. We have now only two clinics for obstetrics and gynæcology, whilst formerly three were hardly sufficient for the needs of students and midwives; but more far-reaching effects will undoubtedly result from the closing down of the clinic for diseases of the nose and throat, of which Prof. Hajek was the chief for 15 years. This laryngological clinic has for more than 50 years been the Mecca of students from all parts of the world, especially from America. Most European laryngologists have obtained some part of their training here, under Schrötter, Chiari, and Hajek. Since it was decided that the teaching of laryngology must be combined with that of otology, the independent existence of this clinic has been doomed. Hajek's clinic was renowned chiefly for work on the surgery of the throat and nose, broncho-œsophagoscopy, and phototherapy of tuberculosis. He has now reached the age-limit and has resigned his appointment. His clinic will be transferred to that of Prof. H. Neumann, the otologist, whose present ear clinic will gain even more importance than it had before. The splendid building where Hajek used to work will be taken over by the eye clinic of Prof. Lindner.

AUSTRALASIA

(FROM OUR OWN CORRESPONDENT)

THE NEW SOUTH WALES MEDICAL SCHOOL

IN 1883 the first medical school of the University of Sydney was built as a small four-room cottage, and Anderson Stuart (later Sir Thomas Anderson Stuart), then but a recent graduate of Edinburgh, was appointed as first dean of the faculty. The original building was enlarged two years later by the addition of a large barn-like building which served as a dissecting room and preparation room. An increasing number of students required accommodation, and between 1887 and 1891 a large building was erected which at the time seemed to be out of all proportion to the demand and was generally referred to as "Stuart's folly." Additions, however, were required to this building in 1909, 1917, and 1922. Recently there has been erected a further large modern building—the gift of the Rockefeller Foundation—which will house the departments of medicine, surgery, obstetrics, pathology, and bacteriology. This building, which has been built close to the Royal Prince Alfred Hospital, is being opened at the end of September.

The history of the development of the medical

school and medical teaching in New South Wales has been largely the story of the life of Sir Thomas Anderson Stuart, who was a man of unusual personal force, untiring energy, and clear foresight. Associated with him in the early years of the school were Sir Alexander McCormick, the pioneer of antiseptic surgery in Australia, who was the first lecturer, Prof. J. T. Wilson (now of Cambridge), who was in charge of the anatomy department from 1890 to 1920, and Prof. D. A. Welsh, who was appointed to the chair of pathology in 1902. Over 2000 students have now passed through the school, which looks forward at this jubilee to new endeavours. With its new medical building, it is more than ever before in a position to make its contribution to medical knowledge and to keep its proper place amongst the great medical schools of the Empire.

AMENDMENT OF THE VICTORIAN MEDICAL BILL

In the Victorian Legislative Assembly a medical Bill has been passed which, when it becomes law, will give to the Medical Board power to remove from the register of medical practitioners men who have been disqualified from practising in other States and countries because they have been found guilty of felonies or of serious professional misconduct. The Board will also have power to refuse to register any such persons that might come to Victoria in the future and to deregister habitual drunkards. Medical practitioners will be permitted to attend any inquiry of the Board into their conduct. The period within which a practitioner may appeal to a judge against deregistration or refusal of registration is reduced from six months to three months.

FINGER-PRINTS ON UNIVERSITY DIPLOMAS

The University of Sydney has decided to use thumb-prints as well as signatures on its diplomas as a means of identification. This decision follows representations by the Medical Board of New South Wales, which first made the suggestion in 1920, and pointed out to the University that a photograph taken at the time of graduation may provide very inaccurate material for identification after a lapse of years. The proposal was brought before the faculty of medicine, which recommended its adoption, and the senate approached the General Medical Council suggesting that this procedure should be followed by the qualifying bodies in England. To this the General Medical Council replied that it had no jurisdiction over the form of diploma issued. The South Australian Medical Board, after making inquiries in New South Wales, decided to adopt the method of attaching two thumb-prints and a signature to all diplomas issued in South Australia. Impressed by the ease of identification of South Australian graduates, the New South Wales Medical Board again recommended the custom to the senate of the University of Sydney; with the result, in future, all medical diplomas issued by the university will have not only the signatures of graduates but also both thumb-prints.

A PROPOSED COLLEGE OF NURSING IN VICTORIA

There is a proposal to establish a college of nursing in Victoria. Many meetings have been held, and one section of the nurses has decided to go on with its own plans for establishing the college. A suggestion was made to the council of the University of Melbourne that it should establish a diploma of nursing. A subcommittee investigated the suggestion and reported against it on the ground that the course proposed is not comparable with the standard required for other diplomas. Of the eight subjects which had been put forward only two or three appeared to be of university standard. The committee were of the opinion that the solution of the problem lay in the establishment of a college of nursing, which could issue its own diplomas and on the governing body of which the university should be strongly represented. The council of the university adopted the committee's report.

THE QUALIFICATIONS OF CORONERS

Inviting applications for the position of coroner recently, the Attorney-General of South Australia is reported to have said that the Government considered that a legal knowledge was more necessary than a medical training, in view of the nature of most of the deaths which are now the subject of coroner's inquest. This appears to be in accordance with the practice in most States in Australia.

ADVANCE IN THE TREATMENT OF BURNS

THE method of treating burns with tannic acid, first advocated by Dr. E. C. Davidson, of Detroit, in 1925, has been modified in detail, not in principle, since that time. At this moment, when the report [1] of a committee appointed by the Mines Department to advise on the treatment of men burned in colliery explosions has just appeared, it is instructive to look back on the developments in tannic-acid therapy during the past eight years. Some of the modifications suggested may be tinged with personal enthusiasm, but others seem to represent genuine advances in a method which has already reduced the death-rate due to burns from nearly 40 per cent. to 11 per cent. or less. In 1929, Mr. W. C. Wilson, at the request of the Medical Research Council, published his results in a series of 117 cases treated with tannic acid in the surgical clinic at Edinburgh. Discarding the use of compresses, recommended by Davidson, he sprayed the burned areas, after they had been cleaned, with a 2·5 per cent. solution of tannic acid; at that time he preferred to use ether for cleansing, as it had the advantage of removing any greasy substances applied before the patient was admitted to hospital. He generally found it advisable to have the patient anæsthetised while the burns were being cleansed, and gas and oxygen was the anæsthetic of choice when shock was severe; otherwise, he thought, ether could safely be given. Vigorous scrubbing was to be avoided because it increased the loss of serum from the burned surface. Warm tannic-acid solution was sprayed on, and quickly dried by means of electric lamps in a bed-cage, or by a current of warmed air. When the coagulum had formed the patient was allowed to remain with the burned surface exposed to the air, under a bed-cage. Compresses wrung out in tannic-acid solution were used to dress any burned surfaces necessarily submitted to pressure.

Other workers have developed a different technique. Last year Mr. J. H. Hunt and Mr. P. G. Scott, house surgeons at St. Bartholomew's Hospital, described the use, after cleansing of the burned area, of a 2·5 per cent. solution of tannic acid in ether, applied, under general or local anæsthesia, by means of a camel-hair brush. Once the coagulum had formed it was reinforced with collodion; and the dressing so formed peeled off after about 14 days, leaving clean skin underneath. They have also used a 5 per cent.

[1] H.M. Stationery Office. Pp. 25. 6*d*.

aqueous solution of tannic acid, reinforced on the third day with collodion, for the treatment of mild burns, and this could be applied, they found, without need of an anæsthetic. They, too, condemned the use of a scrubbing brush for cleansing, as did Dr. D. M. Glover, who used the compress method in his series of over 300 cases at Cleveland, U.S.A. Mr. P. H. Mitchiner, who has used the spray method with success at St. Thomas's Hospital, thinks it too elaborate for general use, and has been employing compresses soaked in 2 per cent. tannic-acid solution and 1/2000 perchloride of mercury at the out-patient department of St. Thomas's Hospital since 1929. He leaves the dressing in position for at least a fortnight, and considers that the perchloride reduces the chance of sepsis. Other observers have tried to prevent sepsis in different ways. R. H. Aldrich produces a coagulum by means of gentian violet, which, he claims, has a specific antiseptic action on the streptococcus. Dr. W. Robertson and Dr. N. Howard Mummery propose the use of acriflavine without tannic acid, which Dr. Mummery applies in the form of a paraffin emulsion. Dr. J. A. Martinez, however, carries us back to the days of "laudable pus," and is undisturbed by the thought of sepsis under the tannic-acid coagulum. Let the pus collect, says he, until the coagulum is thrown off by the suppurative process; delay in the healing of burns is commonly due to the damage inflicted by frequent dressings. All these views, or references to them, have been set out in our columns.[2] It is to be added that Dr. D. B. Wells, of Hartford (Conn.),[3] with edifying thoroughness, puts his patients into a tannic-acid bath and lets them stay there for three hours while devoted nurses pick off bits of debris. After that he has the burned areas sprayed with more tannic acid.

THE REPORT TO THE MINES DEPARTMENT

The report to the Mines Department was prompted by the observation that so many of the men who leave the mine alive on explosion die afterwards from the effects of their burns. It has been compiled by a committee of six, who, besides three well-known Scottish surgeons, include Prof. J. S. Haldane, Dr. S. W. Fisher, H.M. Medical Inspector of Mines, and Mr. W. C. Wilson, and it is instructive to note the further evolution of method since the publication of Mr. Wilson's report in 1929. The committee lay emphasis on the importance of treatment at the time. Carbon monoxide poisoning is best treated on the spot with oxygen and carbon dioxide given for 10 or 15 minutes. Burned patients should be taken to hospital as soon as possible, and exposed burned areas may be covered with dry picric-acid dressings. The committee make it clear that carron oil, hopefully applied, is not only out of date but prejudices the patient's chance of recovery, because it interferes with tannic-acid treatment later. Even when the burns do not appear to be serious the patient should be carried to hospital on a stretcher and kept warm with blankets and covered hot-water bottles; exposure to cold or muscular exertion may augment the effects of carbon-monoxide poisoning. In hospital the burned areas should be cleaned under gas and oxygen anæsthesia, and 3–5 per cent. of carbon dioxide should be added to the mixture to increase the depth of respiration. Ether is contra-indicated because it has a depressing effect on the blood pressure. Cleansing is performed gently with a piece of gauze soaked in normal saline, corrosive sublimate or biniodide of mercury; ether and alcohol should not be used for cleansing unless an oily dressing has previously been applied, because they have an irritant action. The coagulating solution recommended contains 20 per cent. of tannic acid and acriflavine 1 in 1000; the committee find that the incorporation of acriflavine in the coagulating solution almost eliminates sepsis in superficial burns. If sepsis occurs in deep burns they find that a moist dressing containing a hypertonic saline solution promotes the flow of fluid in an outward direction only, and can be applied over the coagulum with perfect safety. To combat the fall of blood pressure which is such a dangerous feature of severe cases of burning, they recommend that 600 c.cm. of 6 per cent. gum-saline should be given intravenously before cleansing, if necessary, and that a further 600–1000 c.cm. should be given after cleansing to prevent a subsequent fall of pressure.

With a view to bringing these recommendations to the notice of mining people the Secretary for Mines is sending a circular letter to all mine owners and to mine rescue stations, outlining briefly the first-aid measures that can be taken to assist the victims of a colliery explosion. A copy of this circular will be sent to any medical practitioner who applies for it.[4]

[2] See especially THE LANCET, 1932, ii., 793; 1933, i., 233, 662, 1138, 1152.

[3] Jour. Amer. Med. Assoc., 1933, ci., 1136.

[4] M.D. Circ. No. 64 from the Mines Department, Cromwell House, Dean Stanley Street, Millbank, London, S.W.1.

THE LONDON MEDICAL EXHIBITION

Drugs and Pharmaceutical Preparations

(*Continued from p. 951.*)

(146) THE MARMITE FOOD EXTRACT CO., LTD. (Walsingham House, Seething-lane, E.C.), showed their well-known yeast extract, a rich source of vitamin B and a potent anti-anæmic agent, as well as being palatable and cheap; they mentioned its value in a very large number of disorders.—(99) MAY AND BAKER, LTD. (Battersea, S.W.), showed many preparations, such as Opacol, a test medium for radiography; Stovaine, a noted local anæsthetic, and Scuroform, an anæsthetic which is completely insoluble in water and so its action is strictly limited to the point where it is placed and it is practically non-toxic. It has never been found to cause secretion reaction. Propidex ointment contains a mixed vaccine for boils, burns, ulcers, and other skin lesions, particularly when suppurating.—(148) MENLEY AND JAMES, LTD. (64, Hatton-garden, E.C.), once again presented their popular products, the Iodex range of preparations, Eskay Neuro-Phosphates, and Pyridium, a urinary antiseptic. Their latest introduction is Pentnucleotide, a mixture of sodium salts of pentose nucleotides, for certain cases of leucopenia and for agranulocytic angina.—(103) H. R. NAPP, LTD. (3 and 4, Clements-inn, W.C.), exhibited a wide range of pharmaceuticals, including Normacol, an intestinal evacuant; Multibral, a new chemical preparation of sodium monobromoleate in coated pellets for prompt administration; Somnosal, a safe sedative; Xorox, a hæmotonic containing spleen, liver, stomach, and anterior pituitary; Raminal, a preparation for high blood pressure; and Anotal, a rheumatism tablet.—(73) OXO, LTD. (Thames House, Queen-street-place, E.C.), had two new preparations: Oxoid Liver Extract for injection for pernicious anæmia, and Oxoid Brand Vitamin A in capsules; they also showed their well-known meat extract and gland products.—(64) PARKE, DAVIS AND CO. (Beak-street, W.) showed their wide range of P.L. preparations, including Hebaral, a new hypnotic, rapid in action and of low toxicity, also useful in alcoholism and pregnancy disorders; Irradex, a new preparation of malt and iron with manganese and vitamins A, B, and D, for children and convalescents; Sal-Ethyl Carbonate tablets, a form of salicylate which does not disturb the stomach as it is slowly dissolved in the small intestine; and

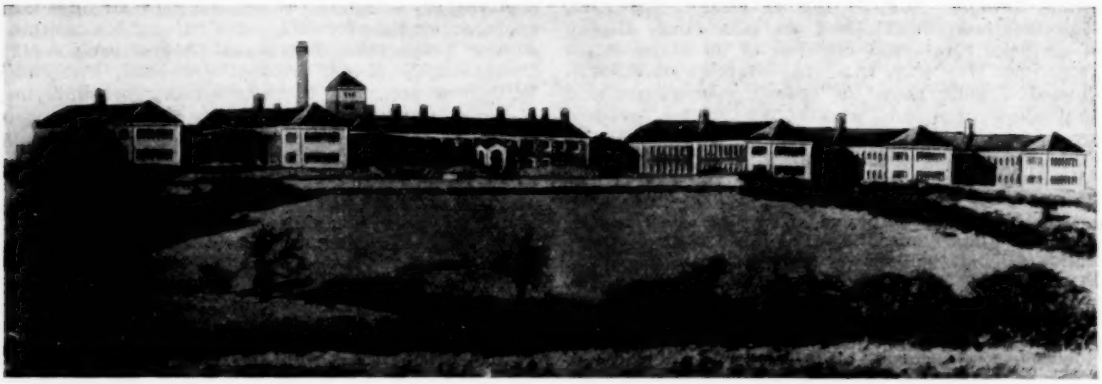
Hemoprotein, a liquid prepared from the fibrin of ox blood for non-specific protein therapy.—(75) PETROLAGAR LABORATORIES, LTD. (Braydon-road, N.), in addition to their popular paraffin emulsion and Neobovinine 20 Compound, introduced a new preparation for nasal congestion, Endrine, containing ephedrine menthol, camphor, eucalyptol, and liquid paraffin.—(46) PHARMACEUTICAL CORPORATION, LTD. (39, Aldersgate-street, E.C.), showed their Novutox local anæsthetic, in cartridge form for charging syringes (Novutubes), and in a convenient packing of ampoules; also their Novaseptic germicide.—(50) PHILLIPS YEAST PRODUCTS, LTD. (Park Royal-road, N.W.), newcomers to the exhibition, exhibited their Live Yeast Tablets, which have no excipient; these are recommended for all those ailments due to deficiency in vitamin B. The separate cells rapidly absorb water in the body and return to the condition of cells of moist barm.—(155) REED AND CARNRICK (Coates and Cooper, 94, Clerkenwell-road, E.C.) showed their many endocrine preparations, particularly Endomin for nutritional anæmias, a preparation of metals in non-irritating, readily assimilable form; Thyracoids, the biologically standardised preparation of iodothyroglobulin; Nephritin, a preparation for renal disease; and Ovacoids, which contain all the hormones of the ovary and of the anterior pituitary.—(58) RESEARCH PRODUCTS, LTD. (12-13, Henrietta-street, W.C.), stressed their hormone preparations, especially ovarian and testicular hormone; and introduced a new capillary active Nasal Jelly containing menthol.—(147) SANDOZ PRODUCTS (J. Flint, 5, Wigmore-street, W.) drew attention to Calcibronat, a new organic salt presenting the combined sedative and neurotonic properties of the bromine-ion and calcium-Sandoz (calcium gluconate). They also showed their well-known Femergin, Optalidon, Scillaren, and Calcium-Sandoz.—(27) SAVORY AND MOORE, LTD. (143, New Bond-street, W.), in addition to their well-known food, showed a range of pharmaceutical preparations including Dr. Jenner's Absorbent Lozenges for acidity; Urotropal, a urinary antiseptic for internal administration, of special value in septic conditions of the bladder; and Medilax, a new preparation for constipation attractively made up in silvered ovoids.—(47) SCHERING, LTD. (3, Lloyd's-avenue, E.C.), showed their new preparation of Solganal-B Oleosum, the latest addition to the Solganal gold series, for injection in cases of infective arthritis and tuberculosis; it is put up in ampoules of sizes varying from gr. 0·01 to gr. 0·4. They also drew attention to their Progynon, a biologically standardised ovarian hormone, and Progynon Oleosum, which can be obtained in ampoules of 1000 and 10,000 mouse units.—(164) SHARP AND DOHME, LTD. (252, Regent-street, W.), particularly pointed out Felton's Serum for the treatment of lobar pneumonia and drew attention to their special typing service; specimens of sputum can be typed by an expert and the result telegraphed within a few hours. They also showed Solution S.T. 37, a stable, non-toxic germicide.—(89) VITMAR, LTD. (Southfields, S.W.), showed their vitamin preparation; their laxative Cibrons, and Meolvol, an emulsion of cod-liver oil with honey, egg yolk, and orange juice. They were also showing several starchless and sugarless foods, such as chocolates, cakes, and biscuits, prepared by Callard.—(34) WILLIAM R. WARNER AND CO., LTD. (300, Gray's Inn-road, W.C.), exhibited Veganin, a sedative and analgesic; also Agarol, the well-tried compound of liquid paraffin, and agar-agar; and Anusol suppositories.

Surgical and Optical Instruments and Accessories

(90) ALLEN AND HANBURYS, LTD. (Bethnal Green, E.), had on view a wide range of surgical instruments and appliances, including the latest model of their St. Bartholomew's Hospital operating table with self-locking device to fix it in any position. The table can easily be converted into a chair for urological work. They also showed electrically heated instrument sterilisers of a new design; stainless steel instruments and dressing tables; the improved Albee's bone saw; a new, noiseless, electrically driven pump for simultaneous negative and positive pressure; A. and H. Azoule plain and medium hard catgut; an all-rubber anæsthetic face-piece, adaptable to any face; and bags and cases of various kinds.—(30) ARNOLD AND SONS (in association with Savory and Moore, Ltd., and John Bell and Croyden, 50–52, Wigmore-street, W.) displayed many surgical instruments and appliances, including the Arnold Operation Table, an improved model, on an oil pump base with a fool-proof action for maintaining the Trendelenburg position; the Arnold Clearlite headlamp; catheters and bougies; combined tonsil ligature and artery forceps; the Mayboil flexible elastic gum instruments which can be sterilised by boiling in water; and the Sparklet Resuscitator for the administration of gases in respiratory emergencies.—(25A) BRUCE GREEN AND CO., LTD. (14, 16, 18, Bloomsbury-street, W.C.), among their ophthalmoscopes, retinoscopes, and other optical instruments, pointed out their new convenient electric head-lamp which has a battery on the head-band, thus doing away with lengths of flex, and a focusing lamp.—(145) CLEMENT CLARKE, LTD. (16, Wigmore-street, W.), displayed optical instruments, including especially apparatus for cultivating binocular vision; their Synoptophore trains strabismic children by means of moving coloured pictures.—(141) STANLEY COX, LTD. (39, Gerrard-street, W.), had a display of X ray apparatus, and particularly demonstrated their Stanco surgical diathermy machine, useful for cutting in water for bladder work, for tonsils and other surgical diathermy.—(167) H. E. CURTIS AND SON, LTD. (7, Mandeville-place, W.), showed their various abdominal belts and appliances and seamless elastic hosiery, and especially emphasised a new Super-elastic Truss with the tail attached to the upper instead of the lower margin of the pad, thus exerting an even pressure over the whole pad.—(86) CUXSON, GERRARD AND CO., LTD. (Oldbury, Birmingham), pointed out their new Variban First Aid Dressing, circular applications of acriflavine gauze spread on expandable material so that they fit firmly the part to which they are applied; also their Cellanband paste-impregnated bandages for use in cases of phlebitis; and their ligatures and surgical plasters of all kinds.—(142) C. DAVIS KEELER, LTD. (47, Wigmore-street, W.), among their optical instruments and spectacles, showed the Keeler Decagon Ophthalmoscope, the only hand ophthalmoscope in existence which gives automatic reading of the refractive error, and also the Keeler wide-angle ophthalmoscope, a useful instrument for the practitioner as it gives a very large and brilliant picture of the fundus.—(65) THE DENVER CHEMICAL MANUFACTURING CO. (London, E.) drew attention to Antiphlogistine, the original chemical poultice which they have marketed for so many years.—(33) C. W. DIXEY AND SON (20, Welbeck-street, W.) had on show a range of optical apparatus, and pointed out particularly their R. F. Jones Orthoptic Letters for exercising binocular vision, which are a form of toy so that the child can improve his binocular vision while at play. They also had a new reading glass shaped rather like a fish, which is easily portable and gives very high magnification and illumination.—(53) DOMEN BELTS, LTD. (licensed distributors of JAEGER MEDICAL SUPPLIES, 26, Sloane-street, S.W.), in addition to pregnancy, hernia, and other belts, also had a display of Jaeger Down and Jaeger Camel Down, both soft, warm, animal wool preparations for use where heat is required, as in pneumonia and rheumatism.—(119, 120, 135) DOWN BROS., LTD. (21, St. Thomas's-street, S.E.), had a comprehensive display of instruments, including a new three-way direct blood transfusion apparatus, which can also be used for air replacement in chest work; stainless steel theatre tables; Hamilton Bailey's automatic local anæsthetic apparatus, and an improved model stainless steel operating table on firm pedestal base, with lateral control and improved

kidney bridge.—(154) J. AND E. FERRIS, LTD. (33, Museum-street, W.C.), had an interesting display of artificial limbs and crutches of all styles.—(18) THEODORE HAMBLIN, LTD. (15, Wigmore-street, W.), showed a wide range of optical instruments and ophthalmoscopes, and also a new crystal material for spectacle frames, folding spectacles, and the Full-Line reading glass.—(39) T. HAWKSLEY, LTD. (Woodstock House, 10, James-street, Oxford-street, W.), showed various aids for the deaf, especially a Portable Marconiphone Otophone, with two standard amplifying valves, outside controls, and standard batteries.—(38) HAWKSLEY AND SONS, LTD. (83, Wigmore-street, W.), had a display of sphygmomanometers and instruments for blood diagnosis; and they specially pointed out their new microscopes, Cooke-Hawksley model, their hæmoglobinometers with solid glass standards, and the new Kompak baumanometers.—(121) C. J. HEWLETT AND SONS, LTD. (35-42, Charlotte-street, E.C.), exhibited a new surgical instrument tray whose compartments have sloping sides so that the instruments can readily be located by touch in a cloudy fluid.—(17) HINDERS, LTD. (174, 192, Estcourt-road, S.W.), showed all-British metal foot supports of various kinds, and Hygia-Plast, zinc-oxide and rubber adhesive strapping packed in an air-tight, dust-proof patent container, with a mechanism for quick unwinding, and also a master spool into which new rolls can be inserted as required.—(2) THE HOLBORN SURGICAL INSTRUMENT CO., LTD. (26, Thavies-inn, Holborn-circus, E.C.), among their selection of surgical instruments and hospital furniture, showed the Holborn No. 4 General Operation Table, an inexpensive model on a pedestal pump base, with nickel-plated accessories; tubular steel consulting-room furniture; the "Fifteen Shilling" Aurolite and the "Fifteen Shilling" Headlamp; the Silex light-carrying stems for mouth mirrors, and electric rectoscope and pistol syringe for the injection of hæmorrhoids.—(110) THE INHALING DRUG AND APPARATUS CO., LTD. (87, Eccleston-square, S.W.), demonstrated their apparatus for inhalation therapy.—(143) JOHNSON AND JOHNSON (GT. BRITAIN), LTD. (Slough, Bucks), had a new extra-supple catgut for giving greater strength in the second knot; their well-known K.Y. Jelly, a lubricant; and a new contraceptive, Ortho-gynol, an occlusive jelly with spermicide in it; this is marketed only to the medical profession and to the public by prescription, and is put up in a tin tube, special precautions being taken to prevent contamination with tinfoil.—(137) J. F. MACFARLAN AND CO. (32, Bethnal Green-road, E.) showed their well-known anæsthetic ether and chloroform, in bulk and in capsules, for labour work.—(156) MEDICAL SURGICAL SUNDRIES, LTD. (97, Swinderby-road, Wembley), showed a variety of useful apparatus, including emergency and midwifery cases and bags of all types; thermometers, syringes, and stethoscopes. Their Esseff modern inhaling apparatus can be used in the patient's own home.—(92) MONSOL, LTD. (Vincent House, Vincent-square, S.W.), had their various antiseptic preparations on view, and particularly pointed out a new waistcoat-pocket size packing of throat pastilles, which has been produced at the request of medical men.—(57) PEARSON'S ANTISEPTIC CO., LTD. (61, Mark-lane, E.C.), in addition to Iodine Medol ointment and Creolin, have marketed a new analgesic ointment, composed of menthol with oil of wintergreen, oil of rosemary, and capsicum, with a special emulsifiable base which leads to rapid absorption and deep penetration; it is recommended for rheumatism, neuritis, and allied conditions.—(18A) THE PROSELDIS CHEMICAL CO. (Harman Freese, 32, Great Dover-street, S.E.) showed various contraceptives, including Van der Velde's latest appliances. The watch spring used in the pessary is very fine and is encased in windings of piano wire so that even if it breaks no damage can be done. The band on the cervical cap is exceptionally elastic, and very thin condom film is used for all caps. They also market contraceptive jelly which is set up in special injection tubes, a new tube for each occasion, and Muiracithin, a new preparation for sexual neurasthenia.—(42) PORTABLE X RAYS, LTD. (Power-road, Chiswick, W.), drew attention to their service for supplying X ray apparatus anywhere at any time, and showed a variety of X ray negatives, all taken under portable conditions.—(23) RAYNER (Rayner and Keeler, 100, New Bond-street), among their ophthalmological and optical instruments, spectacles, and eye-glasses, pointed out the Tudor Thomas pocket ophthalmoscope.—(12) W. J. RENDELL, LTD. (161–165, Rosebery-avenue, E.C.), showed again the Rendell's birth control pessaries, which are now hygienically wrapped in waxed paper and tinfoil.—(51) RECKITT AND SONS, LTD. (40, Bedford-square, W.C.), showed Dettol, a new, non-irritant germicide, with a Rideal-Walker coefficient of 3·0. It is quite stable in blood and pus; instruments can be put in it and sterilised, and its effects last surprisingly long after application.—(24) W. H. PETTIFOR (11, Victoria-street, S.W.) showed the latest improvements in electrical aids for the deaf, especially a small model for a lady's hand-bag, and one- or two-valve wireless apparatus giving very great amplification with tone control.—(26) SALMON ODY, LTD. (7, New Oxford-street, W.C.), demonstrated the value of their Spring Arch Support, which gives an elastic instead of a rigid relief to tired feet; and, in addition to their well-known Ball and Socket Truss, showed surgical belts and body bands fitted with zip fasteners that have a special lock so that they can be taken apart completely.—(28) SAVORY AND MOORE, LTD. (incorporating John Bell and Croyden, 143, New Bond-street, W.), had on view their sterilised dressings, drums, and other aids to the surgeon.—(88) THE SCHOLL MFG. CO., LTD. (188–194, St. John-street, E.C.), displayed their arch supports for the foot.—(62) A. G. SHELDON AND CO., LTD. (59, Weymouth-street, W.), showed the useful packages of surgical dressings in sterilised cases with which the profession is now familiar.—(66) T. J. SMITH AND NEPHEW, LTD. (Neptune-street, Hull), presented again their useful Elastoplast adhesive bandage, of which a cloth form has recently been introduced to give increased support for sprains and in the after-treatment of varicose conditions. They also showed Elastocrêpe bandages and wrist straps; Semiplast; Cellona plaster-of-Paris bandage and medicated dressings.—(157) SPARKLETS, LTD. (London, N.), in addition to their Sparklet Resuscitator for giving carbon dioxide and oxygen, showed a new Hygienator for treatment of the throat and other local applications.—(6) THE SURGICAL MANUFACTURING CO., LTD. (83–85, Mortimer-street, W.), showed a range of stainless steel surgical instruments; syringes; midwifery and surgical bags; and other apparatus for the surgeon, including a portable metal lithotomy couch which prevents the patient from rolling over.—(36A) EDWARD TAYLOR, LTD. (Monton, Lancashire), had on view their range of Flexoplast bandages and adhesive plaster, particularly pointing out the flexible plaster dressing, ready for use, and special plasters of every kind.—(97) THE THERMOGENE CO., LTD. (160, Piccadilly, W.), had their popular medicated wadding on view.—(105) WAITE'S ANTISEPTIC LOCAL ANÆSTHETIC (Cook Laboratories, Inc., New York, U.S.A.) showed their well-known local anæsthetic with the cartridge method of administration, and also the Solila stainless steel needles and Adco hypodermic syringes.—(43) JOHN WEISS AND SON, LTD. (287, Oxford-street, W.), among their display of instruments, especially selected for notice Wright's spinal needles and Harris's needles for trigeminal neuralgia treatment; Robin Paton's phalangeal burrs and bone nippers; and also a series of new instruments and apparatus for ophthalmic work.—(16) THE WILSON RUBBER CO., LTD. (85, Buckingham-avenue, Slough, Bucks), showed their range of rubber gloves for all purposes, both domestic and surgical.

(To be concluded)



View of southern aspect of hospital. *(From an infra-red photograph by Mr. A. L. Cranch.*

LLANDOUGH HOSPITAL

THIS new municipal hospital was formally opened on Oct. 25th by Alderman John Donovan, chairman of the health committee of the Cardiff city council. It has long been realised that accommodation at the City Lodge Institution at Cardiff is inadequate for the needs of the city. In 1912 a site was purchased on high ground at Llandough by the Cardiff board of guardians, and a scheme was prepared for the building of a hospital, which was not then carried into effect because of the war. After peace was declared the scheme was revived and plans were submitted to the Ministry of Health for a hospital consisting at the outset of 340 beds but capable of expansion to approximately 900. An inquiry was held, conferences of the bodies directly concerned and of interested parties were held, and it was not until 1926 that an agreed scheme was prepared and sanctioned by the Ministry.

Tenders were then invited for the construction of the hospital, and in 1928 the Princess Royal laid the foundation-stone. The hospital is situated about three miles from Cardiff. The area of ground available is about 38 acres, of which approximately 20 will be covered by actual buildings. The hill on which the hospital is built commands a wonderful view, overlooking Penarth, Barry, and most of the Bristol Channel towards the south. On a clear day the Somersetshire and North Devon coasts can be seen and in the foreground the islands Flat Holm and Steep Holm in the Bristol Channel, the former containing the hospital set aside for cases of yellow fever and cholera.

The hospital is constructed on the pavilion system. It has two corridors and a basement corridor, each of which are 750 feet long, running from east to west. As will be seen from the plan the administrative block is situated in the centre with five ward blocks projecting south from the corridors. A ward block consists of ten ward units each to accommodate 34 patients, giving a total accommodation for 340 patients. Each ward unit has a main ward 80 feet by 24 feet containing 20 beds, the other 14 beds being accommodated in eight side wards: one with four beds, three with two beds, and four with one bed. Next to each bed in the side wards is a push-button connected with lights in the corridor, ward-kitchen, and main ward.

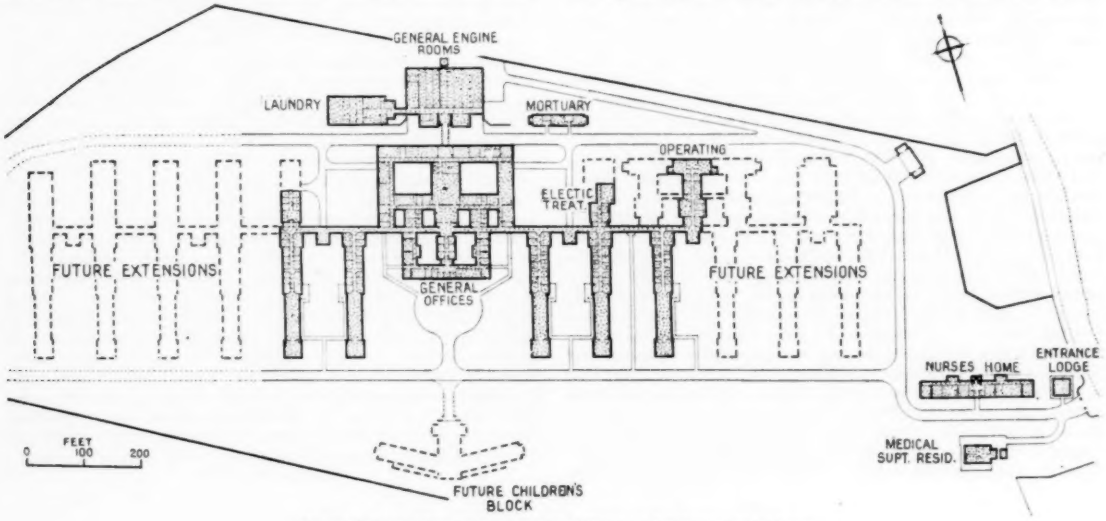
On the south end of each main ward is a solarium fitted with glass permeable to ultra-violet light; the windows can be opened over their whole length when desired.

The beds in the ward units are finished with aluminium enamel, and include a substantial proportion of special bedsteads—viz., Fowler, cardiac, and fracture bedsteads. The bedside lockers have been designed so that the top can be swung round in front of the patient to act as a bed-table.

Each ward contains a built-in medicine cupboard, a bed-pan warming cabinet, a refrigerator, and a combined bowl and instrument steriliser.

Attached to each ward is a small clinical laboratory.

On the northern side of the corridor are the kitchen block and the X ray, theatre, and dispensary units. The nurses' home, the medical superintendent's residence, and



Ground floor plan of present buildings and future extensions.

the porter's lodge are situated on the eastern side of the hospital near the entrance gate. The separate pavilion style of hospital architecture has among other advantages that of eliminating noise from the individual ward unit, which is situated at a great distance from the activities of the kitchens, boiler house, and workshops. This and other features in the construction and equipment have been adopted by the health committee with a view to gaining the maximum quietness in the hospital generally. Thus the hospital is equipped with a staff signalling system of coloured lamps so as to minimise telephone bell-ringing.

The floors of the main X ray unit and ward corridors are covered with blue rubber; the walls are yellow, with green tiles round the windows.

The distribution of food and other requisites to the wards from the central kitchen and stores, and also soiled linen to and from the laundry, will be carried out by means of electric trolleys, and synchronised electric clocks are located in different parts of the building.

The administrative block contains offices, receiving rooms for male and female patients, and accommodation for resident medical officers and the matron, also biochemical and bacteriological laboratories.

The theatre or operating unit consists of two theatres with a common sterilising room for instruments, two anæsthetic rooms, changing rooms, a large sterilising room for dressings, dental and ear, nose, and throat examination rooms, and a plaster room.

The heating is by the so-called panel system, the lighting by shadowless lamps. In the event of the failure of the main supply of electricity, lamps from an emergency supply come on automatically.

X ray viewing boxes have been built in the walls of the theatres and plaster room.

The X ray unit consists of the X ray room, optical and developing rooms, and waiting-rooms. It has been equipped with up-to-date diagnostic apparatus, which is completely shock-proof, including a screening stand, a portable unit and two couches, one of which is of the tilting variety with an attached upright component for special radiographical examinations. Among the accessories are a drying cabinet for X ray films, a stereoscopic apparatus, a reducing camera, and a stand camera for clinical photography. This unit also includes one room set aside for electrotherapeutic purposes, and includes an ultra-violet ray lamp.

The kitchen block.—Steam is used wherever possible for cooking, supplemented by electricity, gas being used for boiling purposes only.

Separate rooms are provided for cold storage of milk, fish, and meat.

The nurses' home has five floors, with a trunk room in the basement. The ground floor is occupied by sitting-rooms, a lecture room, a classroom, cookery instruction room, and a library. There are 116 bedrooms, with a sitting room at the end of each corridor for sisters, and on each floor a combined kitchen and utility room for the private use of the nursing staff.

The boiler house and electrical sub-station, dispensary unit, laundry, mortuary, and garage are all excellently equipped.

ADMINISTRATION AND STAFFING

The hospital, although conceived and partly constructed by the Cardiff board of guardians, was appropriated under the Public Health Acts Amendment Act, 1907, by the Cardiff city council. On the medical side the resident medical staff fall into two categories—a senior permanent staff of two and three short-term resident appointments. The visiting medical staff will be in the main of the consultant type with charge of beds, the medical superintendent, Dr. D. G. Morgan, being in administrative control. Dr. Morgan also acts as medical officer to the City Lodge Hospital, ensuring close coöperation between the two institutions. The deputy medical superintendent is Dr. D. A. Williams.

It has been the policy of the council to appoint only recognised teachers of the Welsh National School of Medicine as consultants in their clinical institutions. Llandough Hospital, like the other council hospitals, will be available for the clinical instruction of students. The consultant staff will include a physician, two surgeons, a radiologist, two ear, nose, and throat surgeons, a physician for diseases of children, a gynæcologist, an anæsthetist, an ophthalmic surgeon, a pathologist, and a dentist.

It is not intended to set aside special rooms at the hospital for people in special financial circumstances, but, in accordance with the provisions of Section 16 of the Local Government Act, 1929, the city council will be under an obligation to recover from patients, or from persons legally liable for their maintenance, the whole or part of the expenses incurred, according to the financial circumstances of the persons concerned. An almoner is to be appointed in connexion with this work and for other duties.

PROPOSED USE OF ACCOMMODATION

In considering the allocation of the 340 beds at the new hospital for the different kinds of diseases, the experience at the City Lodge, the type of cases admitted, and those on the waiting-list of the Cardiff Royal Infirmary will be taken into consideration. The allocation of beds will be approximately as follows: children, 68; gynæcological, 34; medical, 102; surgical, including orthopædic, and ear, nose, and throat cases, 136. At the outset there will be no accommodation for maternity cases. It is thus hoped that the new hospital will materially solve the congestion problem at the City Lodge and do much to reduce the waiting-list of the Royal Infirmary.

The area to be served by the hospital will include that covered by the Glamorgan county council; it is probable that 20 per cent. of the accommodation will be allocated to patients from the county on the understanding that the county council will be responsible for the full maintenance cost of each of their patients, together with some contribution towards capital expenditure.

The *cost* of the whole scheme, including equipment, is estimated at approximately £387,000, made up as follows: land and foundations (including architects' fees), £55,000; superstructure (including architects' fees), £251,600; engineering contract (including kitchen and sterilising equipment and engineers' fees), £40,100; laundry, £11,900; general furniture and equipment, £24,900; layout of grounds, £3000.

The architects are Messrs. Willmot and Smith, the consulting engineers Messrs. Plevin and Jenkins, both of Cardiff, and the builders Messrs. S. C. Taverner and Co., Newport.

LONDON MEDICAL SOCIETIES

AT the opening of a new session we are again giving for the convenience of our readers the names of presidents and hon. secretaries of London medical societies, with the addresses at which they can be approached.

Royal Society of Medicine.—President: Mr. V. Warren Low. Hon. secretaries: Mr. C. W. Gordon Bryan and Dr. Anthony Feiling. Address: 1, Wimpole-street, W.1.

Medical Society of London.—President: Sir John Thomson-Walker. Hon. secretaries: Mr. Neil Sinclair and Dr. H. E. A. Boldero. Address: 11, Chandos-street, W.1.

Hunterian Society.—President: Mr. W. E. Tanner. Hon. secretaries: Mr. Andrew McAllister and Mr. M. H. Oldershaw. Address: 26, Upper Wimpole-street, W.1.

Harveian Society.—President: Lt.-Col. E. L. Gowlland. Hon. secretaries: Dr. Tom Hare and Dr. Macdonald Critchley. Address: Royal Veterinary College, N.W.1.

Royal Society of Tropical Medicine and Hygiene.—President: Sir Leonard Rogers, F.R.S. Hon. secretaries: Dr. C. M. Wenyon, F.R.S., and Dr. N. Hamilton Fairley. Address: Manson House, 26, Portland-place, W.1.

Royal Medico-Psychological Association.—President: Dr. Frank Douglas. Hon. general secretary: Dr. Reginald Worth. Address: The Secretary's Office, 11, Chandos-street, W.1.

Society of Medical Officers of Health.—President: Dr. Charles Porter. Executive secretary: Mr. G. L. C. Elliston. Address: 1, Upper Montague-street, Russell-square, W.C.1.

Tuberculosis Association.—President: Dr. Jane Walker. Hon. secretary: Dr. G. T. Hebert. Address: St. Thomas's Hospital, S.E.1.

British Institute of Radiology.—President: Dr. Stanley Melville. Hon. secretaries: Dr. R. Boulton Myles and Mr. G. E. Bell. Address: 32, Welbeck-street, W.1.

Medico-Legal Society.—President: Sir Bernard Spilsbury. Hon. secretaries: Mr. Ernest Goddard and Dr. W. G. Barnard. Address: 3, South-square, Gray's Inn, W.C.1.

London Association of the Medical Women's Federation.—President: Prof. Mary Lucas Keene. Hon. secretary: Dr. Annis Gillie. Address: 86, Porchester-terrace, W.2.

Medical Society of Individual Psychology.—Chairman: Dr. J. C. Young. Hon. secretary: Dr. F. G. Crookshank. Address: 57A, Wimpole-street, W.1.

Society for the Study of Inebriety.—President: Sir Humphry Rolleston. Hon. secretary: Dr. T. N. Kelynack. Address: 19, Park-crescent, Portland-place, W.1.

London Cancer Society.—President: Mr. Jocelyn Swan. Hon. secretary: Dr. A. J. C. Magian. Address: 144, Harley-street, W.1.

London Jewish Hospital Medical Society.—President: Dr. M. D. Eder. Hon. general secretary: Dr. Reuben Sacks. Address: 24, Skinner-street, E.C.1.

St. John's Hospital Dermatological Society.—President: Dr. J. M. H. Macleod. Hon. secretary: Dr. J. M. Spence Scovell. Address: 49, Leicester-square, W.C.2.

Chelsea Clinical Society.—President: Dr. Leslie Rawes. Hon. secretaries: Mr. Andrew Rugg-Gunn and Mr. Paxton Baylis. Address: 35, Harley-street, W.1.

Hackney Medical Society.—Chairman: Dr. C. E. Evans. Hon. secretary: Dr. Bernard Homa. Address: 20, Dalston-lane, E.8.

Hampstead Medical Society.—President: Dr. J. Herbert Dixon. Hon. secretaries: Dr. David Gillespie and Dr. James Fairbrother. Address: 29, Rosslyn-hill, N.W.3.

North London Medical and Chirurgical Society.—President: Dr. P. O. Ellison. Hon. secretaries: Dr. W. E. Snell and Dr. Kathleen H. Matthews. Address: Royal Northern Hospital, N.7.

North-West London Medical Society.—President: Sir Harold Gillies. Hon. secretary: Mr. Lionel M. Green. Address: 50, Brook-street, W.1.

Paddington Medical Society.—President: Dr. W. G. Bendle. Hon. secretary: Dr. Saul Crown. Address: 81, Elgin-avenue, W.9.

Priory Medical Society.—Hon. secretary: Dr. Alexander Archibald. Address: Seafield, 73, Shoot-up-hill, Cricklewood, N.W.2.

South-West London Medical Society.—President: Dr. George Pollock. Hon. secretaries: Dr. E. C. Housden and Dr. A. W. Wells. Address: 51, Longley-road, S.W.17.

West London Medico-Chirurgical Society.—President: Mr. H. Tyrrell-Gray. Hon. secretaries: Mr. G. B. Woodd Walker and Dr. G. L. S. Konstam. Address: 19, Queen Anne-street, W.1.

PUBLIC HEALTH SERVICES

The Medical Service of a Port

WHEN they were first established the principal and almost only function of port sanitary authorities was to prevent the importation of infectious disease; but like all other public health services port sanitation has developed enormously since then. In a Chadwick lecture delivered in London on Oct. 23rd, Mr. P. W. Coombe mentioned the following activities in which his own authority, the Port of London, is regularly engaged: (1) the prevention of the importation of infectious disease; (2) the prevention of the importation of rat plague; (3) the supervision of the hygiene of crew and passenger accommodation in ships; (4) the inspection of all classes of imported food; (5) the inspection and registration of canal boats; (6) the control of shell-fish layings; (7) smoke abatement; (8) the supervision of the general sanitary conditions of the port sanitary district; and (9) the carrying out of various international obligations in accordance with the International Sanitary Convention of 1926.

The port of London, he said, ends with the Tilbury dock group, 25 miles down river from the city. On the opposite side of the river is Gravesend, and here the work of the boarding medical officers is carried out. All vessels which report cases or suspected cases of infectious sickness or which have touched at infected ports are subjected to inspection by a medical officer before they are granted pratique and permitted to proceed up river. When a ship has berthed, whether in a dock or at a wharf, the work of prevention is taken up by the sanitary inspectors, all of whom hold a master mariner's certificate besides being fully qualified sanitary and food inspectors. The living accommodation of both passengers and crew is examined, and where necessary recommendations as to cleansing, repairs, and structural alterations are made.

An important part of the inspector's duty is a knowledge of the rat conditions of the vessels in his district. Often he is personally familiar with the history of the ships as regards rats, but if not he will have an international certificate of deratisation or exemption to guide him. In any case, to ascertain the condition of the ship at the time of his inspection he must proceed, in conjunction with his "assistant rat officer," to a careful examination of every compartment. When fumigation is necessary the inspector is responsible for its supervision, and international certificates of deratisation or exemption are issued in accordance with his reports.

Early Mental Treatment and the Out-patient Clinic

The early treatment of acute mania calls for little comment from the man in the street. "Lock him up" is the counsel of perfection for the relative, the practitioner, and the observer outraged by the culprit's lack of decorum in social intercourse. But whilst the man in the street visualises insanity in terms of elation or assault, the deeper tragedies of mental perplexity or loss of insight escape his attention. It was to detect such cases and to begin treatment at an early stage that the Mental Treatment Act of 1930 provided that out-patient clinics might be set up by each local authority. During 1932 more of these clinics were started, but there are still districts in which the obstacles to their establishment seem to have resided more in the pessimism of the promoting body than in an insurmountable external cause. These clinics, staffed by the physicians of the local mental hospital, have varied greatly in the number of cases that have passed through them, and these variations seem to have little relation to the size of the area they serve or to the proximity of large towns: 176 new patients have been seen at Cardiff with a total of 563 attendances; in the Isle of Wight 92 new patients

were interviewed with 292 attendances, whereas at Brentford 88 new cases accounted for 136 attendances. In some industrial areas the clinic has not yet been started. For example, the superintendent of the Glamorgan hospital, who notes an increase in the melancholic cases admitted, has to report that difficulties have still prevented the establishment of two proposed clinics in his area. The superintendent of the neighbouring Abergavenny hospital believes that unemployment and its attendant anxiety accounted for some of the admissions to his hospital, though not as many as might be expected. From the figures given it is not possible to be clear how much really new ground has been covered. At Brentford over 50 per cent. of the cases were those in the local observation ward, and these attendances would presumably have occurred without the instrumentality of the new Act at all. At the same centre 12 per cent. were old patients of the hospital, and in other counties the interviews with patients absent "on trial" account for a fair proportion of the attendances. The service that the clinics serve in this connexion is admirable. A number of the entirely new cases haye been attracted by the public notices of the clinics, but more in general have come through practitioners. Several superintendents bemoan the lack of interest shown by the general practitioner in the cases he has referred to the clinic or straight to the hospital once he has been relieved of responsibility. At the Hertfordshire hospital steps were taken to make the provisions of the Mental Treatment Act better known, and at the Devon hospital, for two years, invitations were sent to the general practitioner to ask him to come and see his patient "with the idea of breaking down the feeling of isolation." The superintendent of the York Retreat which takes only private patients finds similar apathy among practitioners. The hospitals, for their part, often fail to send prompt and adequate reports to the doctors of the progress of his patient. The factor which is most to blame in deflecting his interest however is his own belief in the inscrutability of mental disease, and for this the psychiatrist who taught him cannot be absolved from responsibility. When mental disease is made to appear to the student as a vital part of the curriculum, he will later, as a practitioner, go and see his cases, will discuss them with the hospital medical officers, and will refer those who seem abnormally distressed or a little peculiar to the newly established out-patient clinics at a much earlier date than he does at present.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 14TH, 1933

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 3 (last week 3); scarlet fever, 3939; diphtheria, 1248; enteric fever, 57; acute pneumonia (primary or influenzal), 730; puerperal fever, 54; puerperal pyrexia, 125; cerebro-spinal fever, 18; acute poliomyelitis, 17; acute polio-encephalitis, 4; encephalitis lethargica, 10; continued fever, 1 (Battersea); dysentery, 14; ophthalmia neonatorum, 74. No case of cholera, plague, or typhus fever was notified during the week.

The cases of enteric fever were distributed over 21 counties and twice as many sanitary authorities as follows: Derby 2 (C.B. 1, Chesterfield R.D. 1); Devon 2 (Newton Abbot R.D. 1, Torrington R.D. 1); Durham 1 (Chester-le-Street R.D.); Isle of Ely 2 (Chatteris U.D.); Essex 5 (Colchester 3, Epping 2); Kent 5 (Ashford 1, Beckenham 1, Chatham 1, Chislehurst 1, Dartford 1); Lancaster 7 (Liverpool 3, Manchester 2, Preston 1, Litherland U.D. 1); Leicester 2 (Billesdon R.D.); London 4 (Hammersmith 1, Paddington 2, Wandsworth 1); Middlesex 4 (Edmonton 1, Enfield 1, Heston and Isleworth 1, Staines 1); Northants 2 (Northampton R.D.); Northumberland 7 (Gosforth 1, Prudhoe U.D. 2, Morpeth R.D. 4); Nottingham 2 (Sutton-in-Ashfield U.D. 1, Bingham R.D. 1); Salop 1 (Burford R.D.); Surrey 1 (Banstead); Sussex East 2 (Brighton 1, Hastings 1); Westmorland 1 (Kendal); Worcester 1 (C.B.); Yorks North Riding 1 (Whitby R.D.); West Riding 3 (Swinton U.D. 1, Thurstonland and Farnley Tyas U.D. 1, Hemsworth R.D. 1); Flint 2 (Prestatyn).

The number of cases in the Infectious Hospitals of the London County Council on Oct. 17th–18th was as follows: Small-pox, 6; scarlet fever, 2916; diphtheria, 1537; enteric fever, 31; measles, 380; whooping-cough, 172; puerperal fever, 27 mothers (plus 9 babies); encephalitis lethargica, 255; poliomyelitis, 7; "other diseases," 134. At St. Margaret's Hospital there were 16 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 3 (0) from enteric fever, 5 (1) from measles, 6 (3) from scarlet fever, 13 (2) from whooping-cough, 45 (9) from diphtheria, 87 (22) from diarrhœa and enteritis under two years, and 24 (5) from influenza. The figures in parentheses are those for London itself.

Of the deaths from diarrhœa 9 each occurred at Liverpool and Birmingham, 5 at Hull, 4 each at Leeds, Newcastle-upon-Tyne, and Sunderland, 3 at Nottingham. Manchester reported 1 death from enteric fever, Northampton 2. Three fatal cases of diphtheria were reported each from West Ham, Leeds, and Liverpool.

The number of stillbirths notified during the week was 283 (corresponding to a rate of 40 per 1000 total births), including 41 in London.

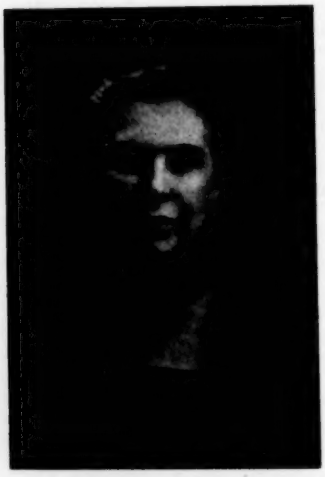
ATEBRIN IN THE PROPHYLAXIS OF MALARIA

Dr. M. Sliwensky, of Sofia, states (Arch. f. Schiffs- u. Tropen-Hyg., August, 1933, p. 389) that on a shooting estate in Bulgaria, on the lower Maritza, and surrounded by forest, the moist warm climate gave so much advantage to the anophelines that Dr. Ruseff, in medical charge, thought antimalarial measures should be taken, and that the best would be prevention by drugs. Up to mid-1931 quinine or quinine with plasmoquine were used. But when in October of that year the 20 persons on the staff were examined, nearly all were found to have large spleens; monocytosis was found in 14, benign tertian parasites in 2, malignant in 1, the hæmoglobin percentage being generally between 70 and 90. Thereupon, every day for seven days, after lunch and dinner, two tablets of plasmoquine co. were given to everyone; subsequent blood examinations were negative, only 6 had monocytosis, hæmoglobin percentages improved. When the autumn epidemic was becoming due something more was thought desirable, and on July 10th, 11th, and 12th everyone was given daily three tablets of atebrin (0·1 g.) and plasmoquine (0·01 g.), one after each meal, and for four weeks thereafter these three tablets were repeated every Wednesday and Saturday. The blood examinations on August 12th were negative. Prophylactic treatment was continued twice a week till the end of November, one-half of the staff getting on each day three tablets as before, the other half two tablets of atebrin (0·1 g.) only. Both groups were re-examined in January, 1933, when all blood films were negative, hæmoglobin values had gone up 20 per cent., 3 had slight monocytosis, only 8 had spleens enlarged, and that only slightly. No clinical inconvenience from this dosage of atebrin was observed. In the adjacent village of Kurtowa, with its 2200 inhabitants, 750 malarial cases were reported in 1932—an attack-rate higher than any reported in the army in India since the war—but no one protected by atebrin, with or without plasmoquine, was attacked. The result suggests that atebrin, 0·2 g. twice a week, may be an effective preventive even in a very malarious district.

OBITUARY

CHRISTINE MURRELL, M.D. Lond.

Christine Mary Murrell, who died on Oct. 18th, was born at Clapham in 1874. She was an only child of Charles Murrell and the only grandchild in a well-to-do family who held liberal views. The ambition of two generations was thus focused upon her career. From an early age she was trained to be observant and to take an intelligent interest in the affairs of the world. Her grandfather used to encourage her to stand on a stool before him and recount the events of the week. Her schooling at Clapham High School and her home background were designed to educate her for a public as well as for a professional life, and her career is a tribute to their success.



DR. CHRISTINE MURRELL

[Photograph by Dorothy Wilding

Christine Murrell entered the London School of Medicine for Women in 1894 and qualified M.B., B.S. in 1899. She was the second woman to hold the post of house physician at the Royal Free Hospital, later becoming medical registrar. She then took up an appointment as clinical assistant at the Northumberland County Asylum; this stimulated an interest in early mental disease, which never flagged throughout her years in practice, and it was in the branch of mental diseases and psychology that Dr. Murrell took the M.D. degree in 1905.

While students together, Dr. Murrell and Dr. Honor Bone found that they shared an ambition to found a practice in the West End of London. There were at that time a few women consultants, and several practitioners were established in working-class districts; but little or no general practice was being undertaken by women in residential districts. They set up together in Bayswater, and their successful pioneer work in developing a large practice has contributed in no small part to the stability of women in the medical profession.

Dr. Murrell entered the profession at a time when her seniors had blazed the trail. She set herself to show that medicine was not only a possible career for girls but could actually provide a competent woman with a sound financial and social position, and the opportunity, if desired, to do important public work. Her enthusiasm for her profession, together with natural warmth of feeling and untiring energy made her unsparing of time and trouble in giving helpful advice to younger women. She was at one time president of the Medical Women's Federation, and was largely responsible for the foundation of the loan fund which the Federation made available for the use of junior medical women starting in practice. Among her professional interests infant welfare was prominent. She took charge of one of the first two infant welfare clinics to be formed by the St. Marylebone Health Society and worked for nearly 20 years for this society, being appointed honorary consulting physician on her resignation from clinic work.

Dr. Murrell took an active interest in the militant movement for women's suffrage, though never herself seeking arrest. During the war she was chairman of the Women's Emergency League and was attached to a division of special constabulary, receiving special mention for her services during air raids.

In 1919 she first entered upon the medico-political activities for which she is chiefly known. She became a member of the central council of the B.M.A. in 1924 after serving on various standing and special committees of the Association. At the time of her death she was chairman of the Kensington division. She was appointed by the Ministry of Health to serve on the General Nursing Council which held office until the end of 1932, and was about to take her seat as the first woman member of the General Medical Council in November, 1933, having been elected as one of three direct representatives of the practitioners of England and Wales.

Dr. Murrell had especial gifts for committee work—whether as member or chairman. She had a clear mind and knew when to emphasise the essential point of the matter under discussion and when to allow some latitude to speakers. Her untimely death is a loss to the whole profession, especially at a time when her ripe experience was to be made available to its governing body.

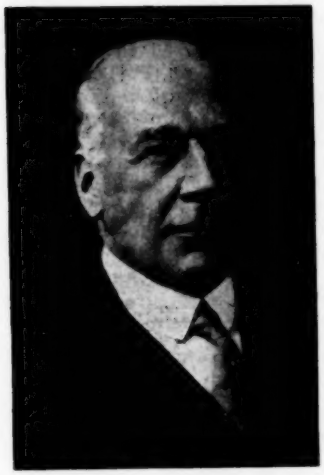
Lady Barrett writes: "Dr. Christine Murrell was professionally an example of the best type of general practitioner—prophylactic in her advice and conservative in the use of drugs. Her knowledge of modern facilities for diagnosis and treatment was kept up to date, and in regard to both she could be relied upon to secure the best specialist help when her patient's case required it. For many years she herself had been a pioneer in infant welfare work, but the psychological side of medicine was her special interest. Perhaps with all her qualifications she might have failed to achieve outstanding success had it not been for her cheerful, vital personality, which gave her patients a sense of safety and an assurance of recovery. Needless to say she became the friend of many women, as well as their medical adviser. Apart from medical work—the thing that struck one in conversation with Christine Murrell was her intellectual honesty. Knowledge to her had very sharp outlines, and she knew quite well and clearly where she agreed or disagreed with the ideas or opinions of another. She would not depart in one iota from what was, to her, the truth. 'I do not deny that I may be wrong,' she would say, 'but this is how I see it, and this is what I believe to be true.' The various causes in which she took a prominent part, e.g., women's suffrage, the election of women to Parliament, the removal of disabilities from women's work, an open door for women in the pursuit of medical studies—all proclaim her an ardent feminist, but to those who knew her, it was clear that this did not arise from sympathy with women as against men, but from her keen sense of justice and her desire to remove unfair handicaps in the race of life. She was a woman of quick and generous sympathies, a fighter to the death to right a wrong, a loyal friend and a gay companion."

DONALD J. ARMOUR, C.M.G., M.B. Lond., F.R.C.S. Eng.

SENIOR SURGEON, THE NATIONAL HOSPITAL, QUEEN-SQUARE

THE death occurred on Monday last in sadly dramatic circumstances of Mr. Donald Armour, the well-known neurological surgeon. He was present in his capacity as honorary treasurer at a council meeting of the Medical Society of London, and manifested no appearance of illness; he submitted his official report, but on resuming his seat was taken suddenly ill, and died immediately.

Donald John Armour, the descendant of a well-known Canadian family, was the son of J. D. Armour, Chief Justice of Ontario. He was born in 1868 at Coburg and educated at Upper Canada College and the University of Toronto, and at both showed the promise which he afterwards fulfilled. On deciding to enter the medical profession he became a student at University College, London. He graduated as M.B. Lond. with honours in 1894 and took the M.R.C.P. three years later, having obtained the English double qualifications. Turning to the surgical side of the profession, he obtained the diploma of F.R.C.S. Eng. in 1900, and held the post with success of senior demonstrator of anatomy at University College medical school. He there attracted the favourable attention of Sir Victor Horsley, the recognised pioneer in this country of neurological surgery, and came to assist Horsley regularly in his operations. He was appointed assistant surgeon to the National Hospital, Queen-square, and his work became largely centred on that hospital, but he held other appointments as a general surgeon, for he was on the staffs of the West London, the Italian, and the Belgrave hospitals, and at all of these was welcomed as an energetic and competent colleague. He soon obtained a large practice as a consultant, and gained much public and professional recognition. He delivered the Arris and Gale lectures at the Royal College of Surgeons of England in 1904–05, choosing for his subject the pathology and surgery of the Gasserian ganglion, and in the following year gained the Jacksonian Prize for his essay upon morbid growths of the vertebral column, spinal cord, and canal in special reference to their amenity to operation.



MR. DONALD ARMOUR
[*Photograph by Russell*

In 1908, as Hunterian professor, he delivered lectures at the College on the surgery of the spinal cord and its membranes. Armour selected only certain material for discussion out of the vast field indicated by the title, devoting one lecture to spina bifida, one to fracture-dislocation of the spine in so far as it relates to injury of the spinal cord, and one to tumours of the cord. The lectures were held to be a valuable exposition of the difficult topics. He contributed over a long period many papers on head injuries, abdominal surgery, and the surgery of the nervous system to the medical journals and the transactions of the medical societies, and in the "System of Treatment," edited by Latham and English, he wrote the articles on surgical diseases on the scalp, the cranium, the meninges, the brain, and the spinal column and cord, over which large range he displayed a familiarity with his subjects which enabled him to point out the therapeutic lessons with clearness and simplicity.

Armour was president of the West London Medico-Chirurgical Society in 1927, and in 1929 was president of the Medical Society of London. His association with this Society, in whose offices his life was so abruptly ended, was a close one. He regularly attended the meetings and contributed to the debates, and like other occupants of the chair, when he attained to the presidency, he was particularly alive to the position of the Society as alike dignified, old, and progressive, and he filled the office in that spirit. He delivered the Lettsomian lectures of the Society in 1927 on the surgery of the spinal cord, these well written and fully illustrated papers being published at the time in THE LANCET. They showed alike his accurate anatomical knowledge and his wide acquaintance with the literature of the subjects. In his presidential address to the Society he bore testimony to his affection for it, for he summarised the work of Lettsom's contemporaries in an essay that will often be quoted for its historical facts.

In 1929 he was president of the neurological section of the Royal Society of Medicine, and in 1930–32 was president of the Association of British Neurological Surgeons. During the war Armour was attached as surgeon specialist to numerous military hospitals with the rank of hon. Lieut.-Colonel R.A.M.C.; he was mentioned in despatches, and in 1918 was appointed C.M.G.

In private life Armour was deservedly popular. He was generous and kind. He was widely read, as elaborate references in his numerous publications showed; he was a genial debater and a fluent public speaker, when his humour lost nothing from a certain native pronunciation which he always kept, though his life from boyhood was passed in England. He was a stalwart friend, and anything which seemed to him to detract from the fame of his bygone chief Victor Horsley, as pioneer or exponent, would immediately draw from him a detailed refutation.

He married Louise, daughter of Captain O. M. Mitchel, an officer in the United States Army, and leaves a widow, one son, and two daughters.

DAVID MILLER MUIR, M.A. Camb., M.R.C.S., D.M.R.E.

Dr. Muir, who died suddenly of heart failure at Exeter on Oct. 18th, aged 46, was well known in the west of England as a radiologist. He had made it his special task to bring the X ray and radiological department at the Royal Devon and Exeter Hospital to a high state of working efficiency. He was the son of David Temple Muir, was born at Ealing, and after matriculating from University College School he went on to Trinity College, Cambridge, where he worked under Sir J. J. Thomson in the Cavendish Laboratory when the possibilities of radiation, but not its dangers, were beginning to be recognised. During the war, having completed his medical qualification at St. Bartholomew's Hospital, he became surgeon-commander in the Royal Navy, attached to the *Bellerophon*. On demobilisation he joined the late Dr. J. D. Harris in partnership at Exeter, and

in 1922 succeeded him as chief of the hospital department. He became a trustee of the Devon and Exeter Cancer Fund at the time when a sum of £11,000 was collected for the purchase of radium, and he was consulting radiologist to the county and city mental hospitals. Dr. Muir was a man of unbounded energy, entering with equal zest into motoring, wireless transmissions, or flying, and with faculties of sympathy and understanding which endeared him to a wide circle of friends and patients. He married, first, Ethel Mary, daughter of F. H. Livens, J.P., and had by her one son. His second wife, Eleanor Brooks Stirling, survives him with two sons, the second born after his death.

CORRESPONDENCE

NASAL INFECTION IN THE PSYCHOSES

To the Editor of THE LANCET

SIR,—Dr. McCowan's paper on this subject in your issue of Oct. 14th is of very great practical interest to a large section of medical practitioners, and by no means restricted to those who have the care of patients certified as of unsound mind. Minor degrees of mental disturbance are quite common in focal sepsis, and, although cases within the group of the psychoses may become grave with scant warning, in the great majority there is a prodromal period when recognition of the causal sepsis and its appropriate treatment would prevent culmination in degrees necessitating certification. It was when I was a junior medical officer at Winson Green Mental Hospital that I had my earliest lessons in the toxæmic factor in some of the inmates; for some years past Dr. T. C. Graves, at Birmingham mental hospitals, and the late Dr. Henry Cotton, of the New York State mental hospitals, have recorded many "cures" following "defocalisation." Now Dr. McCowan, in collaboration with Mr. A. A. Pritchard, consulting laryngologist, and Dr. H. A. Scholberg as his pathologist, has achieved some striking successes.

Obviously it is only in pathological states consequent on toxæmia that these methods of treatment are of such value. But only fuller experience and scientific research can enable us to arrive at reliable statistics indicating the percentage of certified cases that are amenable to relief, and return to normal mentality by means of these methods. They may perhaps be even more valuable in preventing definite mental aberration in cases met with in daily practice.

I am, Sir, yours faithfully,

PATRICK WATSON-WILLIAMS, M.D.

Clifton, Bristol, Oct. 20th, 1933.

"A NEW TECHNIQUE IN GASTRO-JEJUNOSTOMY"

To the Editor of THE LANCET

SIR,—My attention has been called to an article on gastro-jejunostomy by Prof. D. P. D. Wilkie, which appeared in *Surgery, Gynæcology and Obstetrics* in January, 1929. In it there is a reference to the transomental approach. Before I wrote my article with the above title, one of my colleagues and myself had searched through the indices of medical literature as diligently as we could for any such reference and failed to find it; and I had never seen the method employed until I did it for myself. It goes to prove once more the truth of the old saying that there is nothing new under the sun.

I am, Sir, yours faithfully,

IVOR BACK.

Park-square West, N.W., Oct. 23rd, 1933.

MEDICAL NEWS

University of Oxford

On Oct. 12th the degree of bachelor of medicine was conferred upon Morgan Howell Evans.

University of Cambridge

Pinsent-Darwin Studentship in Mental Pathology.—An election to this studentship, which is of an annual value of about £225 and is tenable for three years, will be made in January, 1934. The student must engage in original research which has a bearing on mental defects, diseases, or disorders, but may carry on educational or other work concurrently. Applications should be sent before Jan. 1st, 1934, to the secretary of the studentship at the Psychological Laboratory, Cambridge. No testimonials are required, but applicants should give the names of not more than three referees.

On Oct. 20th the following degrees were conferred:—

M.D.—Lawrence Lawn * and H. P. Nelson.

M.B. and B.Chir.—G. W. Crimmin,* W. A. Elliston, and G. W. Thomas.

M.B.—Elchon Hinden, G. A. W. Whitfield, C. O. Barnes, K. V. Earle, Frank Radcliffe, and J. S. S. Fairley.

B.Chir.—H. B. Tipler,* G. O. A. Briggs,* Henry Barcroft, R. J. V. Battle, E. T. W. Starkie, D. W. C. Gawn, A. W. Langford, and E. L. Cohen.

* By proxy.

Epsom College

St. Anne's Scholarship.—The council of Epsom College will shortly elect a girl to a St. Anne's scholarship of £120 a year, tenable at some approved girls' boarding school. Candidates must be at least nine and not more than twelve years old on July 30th, 1934, and must be orphan daughters of medical men who for not less than five years have been in independent practice in England or Wales. Application must be made by Dec. 16th, 1933, on a form to be obtained from the secretary of the College, at 49, Bedford-square, London, W.C.1.

University of London

Three lectures on Helium Researches will be given in the chemistry lecture theatre of the Imperial College of Science and Technology, South Kensington, S.W., by Prof. Fritz Paneth, director of the chemical institute of the University of Königsberg, at 5.15 P.M., on Tuesdays, Nov. 14th, 21st, and 28th.

Royal College of Surgeons of Edinburgh

At the annual meeting of the College held on Oct. 18th the following office-bearers were elected for the coming year: president, Dr. A. H. H. Sinclair; vice-president, Mr. J. W. Dowden; secretary and treasurer, Mr. J. W. Struthers; librarian, Dr. D. M. Greig; convener of the museum committee, Dr. A. Logan Turner; representative on the General Medical Council, Mr. Alexander Miles; members of the president's council, Mr. Henry Wade, Mr. W. J. Stuart, Mr. George L. Chiene, Dr. J. S. Fraser, Mr. J. M. Graham, and Dr. R. W. Johnstone.

At the last meeting of the College, Mr. John Wheeler Dowden, president, in the chair, the following 35 successful candidates (out of 89 entered), who passed the requisite examinations between July 6th and 15th, were admitted as Fellows:—

William Gillies Annan, M.B. Edin.; Henry Bernard Bagshaw, M.R.C.S.; Gertrude Cicely Banks, M.R.C.S.; Leslie Nelville Burnett, M.B. N.Z.; Geoffrey Thomas Willoughby Cashell, M.R.C.S.; Lewis Frank Day, M.R.C.S.; Robert Evans, M.B. Belf.; Henry William Farrell, M.B. Dub.; Robert Gardiner, M.B. Glasg.; Warren Gamaliel Harding, M.D. (U.S.A.); Wilfrid Wynne Jeudwine, M.D. Camb.; Herbert Oswald Johnston, M.D. Melb.; Harold Benjamin Louis Levy, M.B. Durh.; Innis Mary Macdonald, M.B. Toronto; Kenneth Somerled Macdonald-Smith, M.B. Edin.; Samuel Andrew McFetridge, M.D. Manitoba; James Arnold Noble, M.B. Edin.; Malcolm Murray Parker, M.B. Edin.; Susanne Jean Paterson, M.B. Edin.; Samuel Pinkinsky, M.B. Edin.; James Alexander Price, M.B. Belf.; May Winifred Ratnayeke, M.R.C.S.;

William Robert Sloan, M.B. Belf.; Hamish Gordon Somerville, L.R.C.P. & S. Edin.; Harold Algar Sweetapple, Ch.M. Sydney; George Macdonald Thomson, M.B. Sydney; Ian Bowman Thorburn, M.B. Glasg.; Alfred Clough Turner, M.B. Belf.; Edward Baden Watson, M.B. Otago (N.Z.); Donald Kenneth Weston, M.R.C.S.; Charles Skinner Williams, M.B. Otago (N.Z.); Leslie Sheffield Williams, M.R.C.S.; Neville Pickernell Wilson, M.B. Melb.; Henry George Wyatt, M.B. Lond.; and Man-Kwong Yue, M.B. Hong-Kong.

University of Glasgow

On Oct. 21st the following degrees were conferred:—

M.D. (*with high commendation*).—A. L. Dunlop. (*With commendation.*)—W. L. Forsyth (in absentia), E. E. Henderson, A. C. Morrison, J. A. Montgomery, and Margaret T. Tindal. (*Ordinary degree*).—R. S. Donaldson, Lillias B. Hardie, J. F. Lang, and K. M. Rodger (in absentia).

M.B., Ch.B. (*with commendation*).—J. C. Dick H. B. Muir, Samuel Lazarus, J. D. Fraser, A. P. Robertson, J. B. Macdonald, F. E. Crawley, and John Hutchison. (*Ordinary degree.*)—Alastair Allan, Margaret H. G. Anderson, T. G. Anderson, J. N. Balaskas, Harold Baytch, Moira S. Beaton, J. A. Bentham, Agnes W. Black, N. B. Bluestone, W. L. Broadfoot, A. F. Brown, J. T. Brown, W. T. Buckle, John Campbell, Christina A. Crawford, J. A. Crocket, W. M. Cross, Edith M. Dickson, J. B. Donald, Barbara T. M. Douglas, Ibrahim Al El Korashy, E. J. Emery, Douglas Fairley, J. A. Finegan, May E. M. Fleming, Nathaniel Frank, T. N. Fraser, Jane O. French, H. A. Gibb, James Gilchrist, Agnes R. S. Glover, W. I. Gordon, J. M. Henderson, H. L. Henriques, J. C. Hogarth, J. S. Hogg, R. J. G. Hogg, D. F. Irvine, J. A. D. Johnston, J. S. Judge, J. A. Kilpatrick, William Lamont, R. McM. Latta, D. K. Lennox, E. P. Lynas, J. P. McK. McCarey, D. A. McCracken, F. C. McElwee, J. M. McEwan, William Macfarlane, Ogilvie Macfeat, D. L. Mackenzie, Andrew McLaren, H. McL. McLaren, Margaret B. MacLean, Mary M. Macphail, James Marshall, W. E. Mathie, A. L. R. Mayer, A. G. Miller, T. C. McD. Morrison, A. J. Muir, W. R. Muirhead, H. S. Murray, J. M. Naftalin, Alick Osofsky, J. P. J. Paton, W. W. Pollock, William Reid, Mary McL. Richmond, John Ryder, A. L. Schofield, Thomas Scott, Jacob Shafar, Joseph Sluglett, A. C. Stevenson, R. A. Strang, W. C. Templeton, J. G. Thomson, G. B. Wallace, G. L. Webster, Catherine H. Wright, and J. B. Young.

The Brunton memorial prize, awarded to the most distinguished graduate in medicine of the year 1933, and the West of Scotland R.A.M.C. memorial prize have been awarded to Dr. Gilbert Forbes.

Royal College of Physicians of Ireland

At the annual meeting of the College held on Oct. 18th the following appointments were made for the coming year: president, Dr. F. C. Purser; vice-president, Dr. William Boxwell; censors, Dr. Boxwell, Dr. Bethel Solomons, Dr. C. J. Murphy, and Dr. E. T. Freeman.

The British Institute of Philosophy

Sir Gowland Hopkins, F.R.S., will take the chair at a meeting to be held at University College, Gower-street, London, W.C., on Tuesday, Oct. 31st, at 8.15 P.M., when Prof. J. B. S. Haldane will deliver an address entitled Materialism. Tickets may be had from the director of studies, at University Hall, 14, Gordon-square, W.C.1.

The Institute of Micro-Biology

The council of this institute, 52, Bedford-square, London, W.C., announce an Insect (Fancy Dress) Ball to be held at the Dorchester Hotel, Park-lane, W., on Thursday, Dec. 7th, at 7.45 P.M. Those wishing to be present should address Miss M. F. Little, hon. secretary, at the office of the institute, 52, Bedford-square, London, W.C.

Interpretations of Progress

Five lectures with this general title will be given at the City Literary Institute, Goldsmith-street, Drury-lane, London, W.C., at 7.30 on Monday evenings from Nov. 6th. The individual subjects are economics (Mrs. Wooton), politics (Mr. Gerald Barry), science (Mr. A. S. Russell, D.Sc.), mind (Mr. Gerald Heard), and the use of the self (Mr. A. M. Ludovici). Application should be made to the head of the institute.

Mid-Staffordshire Medical Society

The opening meeting of the second session of this society was held at Stafford on Oct. 13th with Mr. Nesfield Cookson in the chair. The guest of the evening was Mr. Victor Bonney, and instead of giving a formal address he answered questions which were put to him by members. This resulted in an interesting meeting lasting several hours. Among other topics he dealt in some detail with puerperal sepsis. While encouraging the use of all precautions against extrinsic infection, including the wearing of masks, he maintained that the importance of intrinsic infection had hitherto been overlooked.

Medical Congress at Capetown

Some 450 medical practitioners from all parts of the Union of South Africa and from Rhodesia attended the twenty-seventh South African Medical Congress which opened in Cape Town on Sept. 26th. The congress was officially opened by Vice-Admiral E. R. G. R. Evans, commander-in-chief of the African Station, who recalled the part that doctors had played in the history of the Navy and of maritime expeditions. Dr. E. B. Fuller, president of the congress, developed the thesis that under the influence of disease the imaginative and superstitious heritage of mankind came to the surface.

Dr. T. Lindsay Sandes, president of the Federal Council, presented Dr. A. J. Orenstein with a gold medal for meritorious services to the Medical Association of South Africa. The medal, he said, was awarded not so much for Dr. Orenstein's ability and service as for the unfailing interest and enthusiasm he had always shown on behalf of the medical profession in South Africa.

Association of Anæsthetists of Great Britain and Ireland

The annual general meeting of this association took place on Oct. 20th at the rooms of the Medical Society of London, when Dr. H. W. Featherstone, president, presided over a large number of members. The report of the council showed that during the past year the advice and help of the association had been sought on various occasions in connexion with the status and remuneration of anæsthetists in hospital and other practice in various parts of the country, and reference was made to the part which the association had played in connexion with the L.C.C. part-time service. The treasurer's report disclosed a satisfactory financial condition with substantial balance in the bank.

Dr. Howard Jones brought forward the question of anæsthetics in obstetric work, and a full discussion took place regarding especially the manner in which this might be provided for those women who are attended solely by midwives. Finally Dr. Probyn Williams moved, and Dr. Kirkby Thomas seconded, the following resolution which was unanimously carried: "That this general meeting of the Association of Anæsthetists of Great Britain and Ireland views with concern any increase in the administration of anæsthetics by unqualified persons as a danger to the public, and hopes that if the practice is to be extended to midwives, it will only be allowed under strict regulations and after adequate instruction."

Chelsea Clinical Society

The opening of the new session was celebrated by a dinner at the Rembrandt Hotel on Oct. 18th, with Dr. Leslie Rawes, the president, in the chair. Sir William Bragg, O.M., proposing the toast of the Society, said that like others of its kind it sprang from the members' desire to talk over problems and difficulties with their colleagues. The Royal Society had a similar origin and at first was itself almost a clinical society. Such gatherings were responsible for much of the advance made, and all purely scientific people held them in very special respect. Physicists in particular, he said, were proud that more and more of the work done in physical laboratories was finding its contacts with the physiology of the body. The president, in his reply, spoke of the help which the discussions gave him in general practice. The Society's membership was now more than 200, and it was, he thought, the cheeriest and friendliest of all the London medical societies. Mr. Cecil Rowntree proposed the toast of the guests in a speech of mingled respect and abuse, and replies were made by Mr. Charles Billicocq (the French Consul-General), Sir Allan Powell, and Mr. Arthur Wimperis. Mr. Billicocq referred in warm terms to the services of Dr. Campbell McClure, Dr. Eckenstein, and other members of the Society to the French Hospital in London. Sir Allan Powell, in a speech touching lightly on nearly every subject under the sun, mentioned as an index of economic recovery the statement of a doctor that "these men who have nothing wrong with them are now coming back to me." And finally Mr. Wimperis delighted his hearers with an inimitable mixture of appropriate impropriety and charm.

London Hospital Medical College

The Liddle triennial prize for 1932–33, which was open to public competition for an essay on the causes and differentiation of anæmias, has been awarded to Dr. Janet Vaughan.

The Committee on Food Standards

As was mentioned in our last issue (p. 946) the departmental committee on the Composition and Description of Food has resumed its sessions. The chairman is Sir Frederick Willis, and the secretary Mr. W. J. Peete, of the Ministry of Health, to whom any communications should be addressed.

London School of Hygiene and Tropical Medicine

The first award of the Andrew Balfour studentship at this school has been made to Dr. G. M. Balfour, who is taking the course for the diploma in tropical medicine and hygiene. The first award of the Fishmongers' Company studentship in the public health class has been made to Dr. D. D. Payne, and the new Chadwick prize for the best student in the public health class has been divided between Dr. J. M. Henderson and Dr. B. O'Brien.

A Centre for Nurses and Midwives

The new headquarters of the National Birthday Trust Fund, the Queen's Institute of District Nursing, and the Midwives' Institute was declared open by Lady Hilton Young, on Wednesday last, Oct. 25th. A fine house, 57, Lower Belgrave-street, Westminster, has been taken and equipped for this purpose by Sir Julien Cahn, chairman of the Trust Fund. In addition to a lecture room capable of holding 200–300 people, there are offices for each of the three societies, and bedrooms and a club-room to form a hostel for the use of midwives.

Birmingham Dental Hospital

The presentation of medals and prizes awarded to students of the University of Birmingham dental school during the year 1932–33 was made at the Birmingham Dental Hospital on Oct. 12th by Sir John Robertson, professor of hygiene and public health in the university. Mr. Malcolm Knott, chairman of the surgical committee, who presided, said the progress of the school was continuous, and they could claim to be not only one of the largest provincial schools but one of the most successful. Students were gaining an experience which no other hospital or school in the kingdom could offer. During the year ten candidates sat for their final examination, eight in Birmingham and two for the diploma of the Royal College of Surgeons of England, and all passed. Sir John Robertson said that nearly the whole of his time, during the 50 years he had been a medical man, had been spent in preventing disease, and he felt very strongly that the dental profession as a whole was a great branch of preventive medicine. The teaching of people how to get and keep good teeth was much more important than anything else in dentistry, and he impressed on his hearers the importance not merely of being genial with patients but of telling them something about their teeth and digestive organs. A vote of thanks was accorded Sir John Robertson on the proposal of the dean, Mr. Cyril Howkins.

The People's League of Health

A luncheon was given at Claridge's Hotel, London, on Oct. 18th by Miss Olga Nethersole, as founder and honorary organiser of the People's League of Health, to meet its newly constituted veterinary council. Dr. C. O. Hawthorne, chairman of the council of the League, welcomed the representatives of the veterinary profession who had undertaken to serve on the new body when Sir Fredk. Hobday expressed the thanks of that body for the welcome extended to them. An interesting speech followed from Prof. T. J. Mackie, who considered the formation of a veterinary council to be a significant development in the activities of the League, having regard to the fundamental problems of milk-supply which awaited solution. He congratulated the League upon having performed valuable public service in surveying and reporting upon the position of the country with regard to bovine tuberculosis, and referred to a discussion on the milk-supply of the country which took place in the section of agriculture of the British Association at Leicester, in which he and Miss Nethersole had taken a part. He thought that the result was a verdict for compulsory pasteurisation, and that agricultural and public organisations were wrong in tacitly sanctioning the sale of raw milk. Prof. Basil Buxton deplored the fact that the vast majority of the public had no idea that there was safe milk available, and believed that when this knowledge was spread the supply of such milk would automatically increase. Pasteurisation, he admitted, had its merits, but it was necessary to have a clean supply of milk from the source. Sir Leonard Hill considered that pasteurisation would not lessen the nutritive quality of milk in any degree; Mr. G. P. Male stressed the need for helping the producer to free his herds from disease; and Major Rabagliati related the work which had been done in the West Riding of Yorkshire to obtain a clean milk-supply.

Interesting letters in respect of the institution of a veterinary council were received by Miss Nethersole from Lord Bledisloe, Sir Henry Dale, Lord Horder, Lord Moynihan, and others, while Dr. T. Carnwath and Mr. T. J. Kelland attended the luncheon representing respectively the Ministry of Health and the Ministry of Agriculture.

Vacancies

For further information refer to the advertisement columns

Birmingham and Midland Eye Hospital, Church-street.—Res. Surg. O. £200.
Bloomsbury Dispensary, 12, Bloomsbury-st., W.C.—Res. M.O. £250.
Bristol, Southmead Municipal Hospital.—Asst. Res. M.O. £200.
Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Res. H.S. At rate of £75.
Charterhouse Rheumatism Clinic, 94, Hallam-street, W.—Hon. Asst. Physician.
Derby, Derbyshire Hospital for Women, Friar Gate.—H.S. At rate of £150.
Dudley, Guest Hospital.—H.S. £170–£200.
Durham County Hospital.—Two H.S.'s. Each £150.
Finchley Memorial Hospital, Granville-road, N.—Res. M.O. At rate of £150.
Guildford, Royal Surrey County Hospital.—H.S. £150.
Hampstead, Queen Mary's Maternity Home, Heath-street.—M.O. 120 gns.
Hospital for Diseases of the Skin, 71, Blackfriars-road, S.E.—Registrar.
Hull Royal Infirmary.—Hon. Physician.
Ilford, King George Hospital.—Asst. Ophth. Surgeon.
King's Lynn, West Norfolk and King's Lynn General Hospital.—H.P. At rate of £125.
Lambeth Hospital, Brook-st., Kennington, S.E.—Asst. M.O. £350.
Lancs, Wrightington Hospital, Parbold.—Jun. Asst. M.O. £200.
Leicester Royal Infirmary.—Two Res. Anæsthetists. Each at rate of £150.
London County Council.—Part-time Assts. 30*s.* per session.
London University.—Sir William Dunn Chair of Pathology at Guy's Hospital. £1400.
Lowestoft, St. Luke's Hospital.—Asst. M.O. £350.
Manchester Ear Hospital, Grosvenor-square, All Saints.—Res. H.S. £120.
Manchester, Northern Hospital for Women and Children.—Sen. H.S. £130.
Midhurst, Sussex, King Edward VII. Sanatorium.—Med. Supt. £1000.
National Hospital for Diseases of the Nervous System, Queen-square, W.C.—Hon. Orthopædic Surgeon. Also Registrar and Asst. Registrar. Each £200.
Newport, Mon. Royal Gwent Hospital.—Asst. Hon. Surg. Also Hon. Anæsthetist.
Oswestry, Robert Jones and Agnes Hunt Orthopædic Hospital.—H.S. At rate of £200.
Portsmouth Education Committee.—School M.O. £500.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, N. Kensington.—Part-time Pathologist and Bacteriologist. £250.
Queen Mary's Hospital for the East End, E.—Hon. Asst. Radiol.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Royal Chest Hospital, City-road, E.C.—Res. M.O. and H.P. At rate of £150 and £100 respectively. Also Med. Reg. At rate of £50.
Royal Free Hospital, Gray's Inn-road, W.C.—Hon. Anæsthetist. Also Second Asst. Surg. to Ear, Nose, and Throat Dept.
Royal Northern Hospital, Holloway, N.—H.P. and H.S. Each at rate of £70.
St. Helens Hospital, Lancs.—Jun. H.S. £150.
Sheffield Royal Infirmary.—H.S. At rate of £80.
Sheffield University.—Asst. Pathologist and Demonstrator of Pathology. £500. Also Chair of Pharmacology.
Southampton Borough Hospital.—Jun. Res. M.O. £200.
Southampton County Borough.—Clin. Tuber. O. and Asst. M.O.H. £750.
West Bromwich, Hallam Hosp.—Two Res. H.P.'s. At rate of £200.
West London Hospital, Hammersmith-road, W.—Cas. O. £250.
Wigan, Royal Albert Edward Infirmary and Dispensary.—Hon. Asst. Surgeon.
Willesden Urban District Council.—Ophthalmic Surgeon. 28 gns. per session.
Wolverhampton Royal Hospital.—H.S. for Orthopædic and Fracture Dept. At rate of £100.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Northwich, Chester.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, Oct. 31st.—8 P.M., PATHOLOGY. Laboratory Meeting at the Lister Institute of Preventive Medicine, Chelsea-gardens, S.W. Short Communications and Demonstrations. H. L. Schütze: Some Further Observations on *B. pestis* Antigen. W. T. J. Morgan and A. C. Thaysen: Decomposition of Specific Bacterial Polysaccharides by a Species of Myxobacterium. C. R. Amies: Further Experiments with Varicella Virus. G. Favilli and D. McClean: Influence of Testicular Extract on the Fragility of Red Blood Corpuscles. M. H. Finkelstein: An Improved Method for Obtaining Thick Suspensions of Elementary Bodies from Fowl-pox Lesions. D. W. Henderson: The Culture in vitro of Louping-ill Virus.
WEDNESDAY, Nov. 1st.—5 P.M., HISTORY OF MEDICINE. Prof. Burger (Amsterdam): The Doctor, the Quack, and the Appetite of the Public for Magic in Medicine. 8.30 P.M., SURGERY. Prof. George Gask: The Strategy of the Fight Against Cancer. (Presidential address.)
THURSDAY.—5 P.M., Prof. H. Burger: The So-called Associated Paralyses of the Larynx—Multiple Cranial Nerve Palsy. (Semon lecture.) 8.15 P.M., TROPICAL DISEASES AND PARASITOLOGY. Sir Aldo Castellani: Elephantiasis Nostras. Members of the Sections of Dermatology, Medicine, and Surgery are specially invited to attend and to take part in the discussion.
FRIDAY.—10.30 A.M., OTOLOGY. (Cases at 9.30 A.M.) Discussions. Vertigo. Labyrinthine Tests and their Aid to Diagnosis. Openers: Dr. W. Russell Brain and Mr. Alex. R. Tweedie. 5 P.M., LARYNGOLOGY. (Cases at 4 P.M.) 8.30 P.M., ANÆSTHETICS. Dr. H. P. Fairlie: Anæsthesia in Gynæcology. (Presidential address.)

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.
FRIDAY, Nov. 3rd.—8.45 P.M. (at the West London Hospital), Clinical and Pathological Meeting. Cases at 8 P.M.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
THURSDAY, Nov. 2nd.—5 P.M., Dr. C. S. Myers: A Psychological Regard for Medical Education. (Bradshaw lecture.)

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.
MONDAY, Oct. 30th.—5 P.M., Mr. C. P. G. Wakeley: Specimens of Long Bones, showing the Processes of Infection and Repair (Museum demonstration).
FRIDAY, Nov. 3rd.—5 P.M., Mr. Wakeley: Specimens illustrating Gun-shot Wounds of the Skull and Brain.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Oct. 30th, to SUNDAY, Nov. 5th.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Course in Gynæcology. Mornings and/or afternoons.—CENTRAL LONDON OPHTHALMIC HOSPITAL, Judd-street, W.C. Course in Ophthalmology. Afternoons only.—CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C. Week-end Course in Obstetrics. All day Sat. and Sun.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, W. Course in Diseases of the Nervous System (intended for general practitioners). All day.—PANEL OF TEACHERS. Individual clinics are available daily by arrangement with the Fellowship of Medicine. Courses, &c., arranged by the Fellowship of Medicine are open only to Members and Associates.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
MONDAY, Oct. 30th.—10 A.M., Dr. Hutchison: Chronic Constipation in Infancy and Childhood. 11 A.M., Dr. Shires: The Use of Opaque Meals and Enemas in Diagnosis of Alimentary Disorders (X ray demonstration). 12 noon, Dr. Wyllie: The Epilepsies in Childhood (clinical demonstration). 2 P.M., Dr. Thursfield: Ward Visit. 3 P.M., Dr. Nabarro: Treatment in Meningitis.
TUESDAY.—10 A.M., Dr. Schlesinger: Cœliac Disease (clinical demonstration). 11 A.M., Dr. Ellis: Pulmonary Fibrosis and Bronchiectasis (clinical and pathological demonstration). 12 noon, Mr. Browne: Treatment of Congenital and Acquired Deformities of the Limbs (clinical demonstration). 2 P.M., Dr. Wyllie: Birth Palsies (clinical demonstration). 3 P.M., Dr. Signy: The Diagnosis and Treatment of Poliomyelitis.
WEDNESDAY, Nov. 1st.—10 A.M., Dr. Poynton: Ward Visit. 11 A.M., Dr. Gray: Diseases of the Skin (clinical demonstration). 12 noon, Mr. Addison: Osteomyelitis or Ward Visit. 2 P.M., Mr. Apperly: Dental Caries (clinical demonstration). 3 P.M., Dr. Payne: The Bleeding and Clotting times in Hæmorrhagic Diseases (clinical laboratory demonstration).
THURSDAY.—10 A.M., Dr. Hutchison: Ward Visit. 11 A.M., Mr. Tyrrell-Gray: Clinical demonstration of Out-patients. 12 noon, Dr. Cockayne: Diarrhœa and Vomiting in Breast- and Bottle-fed Infants. 2 P.M., Dr. Thursfield: Ward Visit. 3 P.M., Dr. Nabarro: Bacterial Infections of the Bowel.
FRIDAY.—10 A.M., Dr. Schlesinger: Pyloric Stenosis and Pylorospasm (clinical lecture). 11 A.M., Mr. Barrington-Ward: Ward Visit. 12 noon, Dr. Pearson: Disturbances of the Thyroid Gland (clinical demonstration). 2 P.M., Dr. Frew: Ward Visit. 3 P.M., Dr. O'Reilly: The Rheumatism Clinic (clinical demonstration).
SATURDAY.—10 A.M., Dr. Poynton: Ward Visit. 11 A.M., Dr. Paterson: The Feeding of Infants from the ninth month up to two years of age. 12 noon, Mr. Penman: Treatment of Squint in Children (clinical demonstration).

ROYAL INSTITUTION, Albemarle-street, W.
TUESDAY, Oct. 31st.—5.15 P.M., Prof. G. Elliot Smith: The Nervous System (second of four lectures).

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Nov. 3rd.—4 P.M., Mr. W. G. Scott-Brown: Œsophageal Obstruction.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Oct. 30th.—3.30 P.M., Dr. Greenfield: Chemistry of Cerebro-spinal Fluid.
TUESDAY.—Dr. D. Brown: Spinal Reflexes.
WEDNESDAY, Nov. 1st.—Dr. Collier: Clinical Demonstration.
THURSDAY.—Dr. Walshe: The Motor System.
FRIDAY.—Dr. B. Hart: The Psychoneuroses.
Out-patients' clinics each day at 2 P.M.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL Post-graduate Lectures.
WEDNESDAY, Nov. 1st.—4 P.M., Dr. H. M. Oddy: Purpura, its Causes and Treatment.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Nov. 1st.—4.30 P.M., Mr. R. H. Jocelyn Swan: Frequency of Micturition.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Chandos-street, W.C.
SUNDAY, Oct. 29th.—10.30 A.M., Dr. Russell J. Reynolds: Radiotherapy. Demonstration of Cases. 11.45 A.M., Mr. L. R. Broster: Surgical Emergencies.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
THURSDAY, Nov. 2nd.—4.30 P.M., Dr. G. F. Still: Prevention of Diseases in Infancy. 9 P.M., Dr. J. A. Drake: Intractable Skin Diseases.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, Nov. 1st.—4 P.M., Dr. C. E. Lakin: Demonstration of Medical Cases.

INSTITUTE OF HYGIENE, 28, Portland-place, W.
WEDNESDAY, Nov. 1st.—3.30 P.M., Dr. R. King Brown: Health in Winter.

ROYAL INSTITUTE OF PUBLIC HEALTH, 23, Queen-square, W.C.
WEDNESDAY, Nov. 1st.—4 P.M., Dr. D. H. Geffen: Citizenship and Parentcraft.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Oct. 31st.—5 P.M., Dr. H. MacCormac: Diseases Due to Animal Parasites.
THURSDAY, Nov. 2nd.—5 P.M., Dr. W. J. O'Donovan: Occupational Dermatitis.

CHADWICK PUBLIC LECTURES.
THURSDAY, Nov. 2nd.—5.30 P.M. (at Manson House, 26, Portland-place, W.), Dr. P. Flemming: The Sanitary Arrangements of the Medieval Monastery.

ANCOATS HOSPITAL, Manchester.
THURSDAY, Nov. 2nd.—4.15 P.M., Mr. P. G. McEvedy: Examination of a Patient, with Special Reference to Acute Appendicitis.

LEEDS GENERAL INFIRMARY.
TUESDAY, Oct. 31st.—4 P.M., Prof. C. W. Vining: Diseases of Children.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST, Hardman-street, Deansgate, Manchester.
WEDNESDAY, Nov. 1st.—4.30 P.M., Dr. Vernon Smith: Sinusitis: its Cause with Special Reference to Bathing.

MANCHESTER ROYAL INFIRMARY Post-graduate Course.
TUESDAY, Oct. 31st.—4.15 P.M., Dr. W. Fletcher Shaw: Medicine in America.
FRIDAY, Nov. 3rd.—4.15 P.M., Mr. A. H. Burgess: Demonstration of Surgical Cases.

GLASGOW Post-graduate Lectures.
WEDNESDAY, Nov. 1st.—4.15 P.M. (at the Western Infirmary), Mr. G. H. Edington: Treatment of Fractures and the Bone Lesions.

METHODS OF TREATING TUBERCULOSIS.—Dr. Peter Edwards, medical superintendent of the Cheshire Joint Sanatorium, near Market Drayton, Shropshire, is prepared to give a series of short intensive post-graduate courses on modern methods of therapy in tuberculosis of the respiratory system, with special reference to collapse therapy. Methods of sanatorium administration will also be demonstrated. No class will exceed four members in number, and those attending need not necessarily stay more than three days. Board and residence can be obtained within a convenient distance of the sanatorium. Further particulars may be had from the hon. secretary for post-graduate courses, Joint Tuberculosis Council, 8, Highway-court, Beaconsfield, Bucks.

NOTES, COMMENTS, AND ABSTRACTS

HISTAMINE IN RHEUMATISM

BY A. A. BISSET, M.D. ABERD.
AND
A. WOODMANSEY, M.Sc., A.I.C.
HON. CONSULTING CHEMIST, ROYAL BATH HOSPITAL, HARROGATE

THE importance of circulatory disturbances in rheumatic disorders has recently attracted much attention. In 1928, by the courtesy of Dr. E. G. Pierce and Dr. R. Pemberton, of the Presbyterian Hospital, Philadelphia, one of us (A. A. B.) was shown the results of the classification of studies of the capillaries in patients attending their rheumatic clinic. Systematic observations of nail-bed capillaries were thereupon commenced, an account of which was afterwards published.[1]

The striking feature in nearly all examinations of rheumatic subjects was the spastic or attenuated condition of the capillaries. This suggested the presence of an abnormal vasoconstrictor substance or the lack of a normal vasodilator. Either factor might be expected to produce an imbalance and so affect the calibre of the capillaries. The dilator substance which had been most discussed in reference to the capillaries was histamine or the "H" substance of Lewis, who found [2] that if a dilute solution of histamine was pricked into the skin a flare was produced, followed in a measurable time by a wheal. We carried out tests to determine whether this response shown by normals was borne out in cases of various types of rheumatism. The sum total of the tests seemed to indicate that in these cases the response was less marked, delayed, or inhibited. It was then surmised that the normally occurring dilator was deficient, and substitution by artificial means was attempted in the form of medication with a histamine preparation.

Subsequent publications have shown that similar treatment has been independently given by Deutsch,[3] Jacchia,[4] Rosenbleuth and Ronald,[5] Bettmann,[6] Vas,[7] Burkardt,[8] Stark,[9] Schenck,[10] and Behrend.[11]

Three possible methods of introduction were available—viz., per os, by injection (intravenous, intramuscular, or subcutaneous), or by electrophoresis. Histamine by mouth is known to be ineffective. Intravenous injections have many disadvantages, notably the fact that in order to exercise the optimum effect the injection should be of the "drip" type. Hypodermic injections can give rise to untoward symptoms when it is too late to arrest their effect. Electrophoresis proved to be the most adaptable and agreeable to the patient, and a constant penetration could be obtained under absolute control. Moreover this method enabled an effect to be produced where symptoms were most localised, in addition to the systemic action reported by most other observers who have used the alternative means.

Histamine is an amine or organic base, and is supplied commercially in the form of its salt, the acid phosphate, A/1 : 5000 solution in distilled water is prepared. Any suitable source of direct current, such as the usual apparatus for administering "cataphoresis" treatment, may be used. The anode pad, consisting of several layers of lint, is saturated with the histamine solution, lightly squeezed, placed over the affected part, and the metal gauze or flexible lead electrode strapped on by means of rubber ribbon. Any ordinary electrolyte may be used for the cathode, which is similarly placed in contact with another limb or part of the body. The current is gradually brought to the required strength (say 10 milliamperes), according to the patient's reaction, and maintained for 10 to 20 minutes. By calculation from published data it may be assumed that approximately 0·065 mg. of histamine are transported per milliampere per minute towards and through the skin.

RESULTS

A reaction is observed at the positive pole, which differs in a marked degree from that observed when the usual drugs for cataphoresis are used, viz., potassium, lithium, or sodium salts. The area at that pole becomes erythematous and shows isolated patches of œdema, which gradually coalesce with continued treatment to form an extensive wheal marking the area of the electrode. A flare surrounds the wheal. The appearance after a large dose is alarming, but there is no actual pain. The wheal and flare last for several hours. There is a sensation of itching and irritation, which may usually be allayed by talcum powder. The reaction corresponds to that described by Lewis as the third phase of his triple response. Lewis describes this third phase as being due to the liberation of "H" substance and a resulting permeability of the local capillaries.

The wheal resulting from treatment is irregular in outline, with the irregular edges corresponding to the shape of the anodal pad. There is also a marked flush surrounding the area. If the application is over a painful area, as in osteo-arthritis of one of the smaller joints, there is a feeling of anæsthesia on joint movement, which usually persists for several hours. Similar results are apparent on applications over painful muscle areas.

The results which have been obtained may logically be explained on the basis of an increased blood- and lymph-supply to the affected part. According to the dosage, the face and the parts of the skin usually exposed become red and flushed. Increased dosage gives a basal headache with a feeling of protrusion of the eyes, followed by a sharp splitting occipital headache and anginal pains of the chest. Sometimes a bitter taste is noticed. These latter symptoms are to be avoided. As they appear to be of a toxic nature Streicher [12] sounds a note of caution. Pickering and Hess [13] state that headache begins about 40 seconds after an intravenous injection of 0·1 mg. of histamine, but passes off in six to ten minutes. In treatment by electrophoresis this headache can always be arrested immediately by decreasing the current. Its onset can be obviated by reducing the current when face flushing is observed. Various other changes capable of exact record occur during the treatment.

Blood pressure.—In most cases where the blood pressure was measured there was a fall in the systolic from 4 to 30 mm., and in the diastolic as much as 20 mm. decrease has been found. These cases were all about normal at the commencement of the treatment. No high pressure cases have yet been treated. In a few subjects the pressure remained fairly constant or rose. The generally accepted explanation of the effect of histamine on blood pressure is that the tone of the capillary walls is lowered and their permeability increased. Thus the larger vessels are depleted by peripheral stasis and considerable exudation of fluid into the tissue spaces. The mechanism of traumatic and surgical shock has been explained in terms of the supposed liberation of histamine from injured tissue. Weiss and others [14] found that with gradually increasing intravenous doses the systolic pressure of normals was essentially unaltered. The diastolic showed a slight tendency to fall. Subcutaneous injection usually caused a slight fall in both.

The pulse-rate.—In the majority of cases a slight steadying was observed, though in a small number there was an increase of up to 12 beats per minute. Weiss [15] found a slight increase in cardiac rate with minimal doses, greater with progressively increased amounts when introduced by the vein. The subcutaneous method caused a maximum increase of 10 to 20 beats. In both pulse-rate and blood pressure our findings cannot be said to support Weiss. This

may be accounted for by differences in method of administration.

General temperature.—The patient rarely fails to experience a feeling of warmth, but this may be due partly, though not entirely, to the flushing of the face. The mouth thermometer showed an average elevation of 0·6° F. in 25 cases.

Skin temperature.—For this measurement the modern method of thermo-couple with galvanometer was used. A couple consisting of a fine nickel and constantan wire was constructed, and the exposed soldered junction stretched over a small cork, the remainder being protected by rubber tubing. The opposite (" cool ") ends of the couple were attached to flexible copper wire, in proximity to a thermometer which was connected through a reverse pole-switch to a microamperemeter. By means of a thermostatic water-bath the apparatus was calibrated so that one division of the scale represented n° C. temperature difference to be added to the thermometer reading. The old method of taking skin temperature, using a flat-bulbed mercury thermometer, required at least five minutes to obtain anything like a constant reading, and even then one could not be satisfied that the correct temperature had been recorded. Owing to the low specific heat of the exposed end of the thermo-couple an application of a few seconds' duration is sufficient to give an accurate reading.

Measurements of temperature on and around the site of the applied histamine (anode) pad gave an average increase equivalent to 1·69° C. after treatment. The negative site generally showed a slight decrease. Our results confirm Wright [16] when he states that subcutaneous injection produces a rise of 1° to 2° C., but Weiss in the paper quoted found that intravenous application often gave no elevation or skin temperature. This perhaps may be claimed as a further advantage for electrophoretic administration of histamine in local conditions.

Capillaries.—Microscopic examination of the skin in areas other than that being treated shows some increase in the calibre of the capillaries, and also in the number visible. The blood flow is definitely accelerated, but it is difficult to measure the rate. There is also an increase of the intercellular lymph.

Urine changes.—Biochemical tests on the urine up to the present have been inconclusive.

CLINICAL NOTES

In the above work histamine treatment has been recognised as ancillary to rather than as a substitute for methods directed towards the general condition of the patient. These latter have included the usual spa treatment, involving internal and external use of medicinal waters by which metabolic functions in the widest sense may be improved.

In osteo-arthritis beneficial results have been obtained, especially where the smaller joints have been involved. Crepitus, pain, and restrictions of movement disappear after a few applications, but in the hips and vertebræ the results are less evident. In these cases repeated treatments at two days' interval are necessary before any alteration in the condition is seen. Lessening of the pain is first noticeable, followed by increase in the mobility.

Arthritis of the knees, probably owing to the possibility of surrounding the whole joint with the anodal pad, has shown the most marked and rapid improvement. The tissue swelling, however, is late in disappearing, but improvement continues after the discontinuance of the applications. Only two cases when the shoulder-joint was involved have had histamine applications, and both showed definite decrease of pain and increase of range of movement after three applications.

In chronic cases of articular gout benefits were very marked. Also in acute gout the duration of pain was shortened with small dosage along with other remedies. One patient, aged 84, with a history of repeated attacks, averred that a treatment avoided an oncoming flare-up. Considerable benefit ensues by the method in fibrositic muscular thickening when associated with ordinary massage. Some but not all cases of subchronic rheumatoid arthritis were improved. The peri-articular swellings in many cases were markedly decreased. The full effect of this decrease was not evident until several weeks after the end of the treatments. The movement of the joints also was benefited. In post-herpetic neuritis some easement of the pain was obtained after each application.

The most evident result to the patient, apart from some irritation, is a feeling of anæsthesia in the part treated. This continues for some hours, and if a painful joint, especially one of the smaller ones, is being dealt with, the pain does not return with the same severity. This analgesic effect has been attributed to the galvanic current, but experience after using several drugs and plain water at the anode does not bear out such explanation. Histamine alone seems to produce the effect on joint and rheumatic muscular pains. The general results have been sufficiently successful to standardise the treatment as a routine method in suitable cases, and patients are sent with prescription to be carried out by the trained attendants at the Royal Baths, Harrogate.

REFERENCES

1. Bisset, A. A., and Woodmansey, A.: THE LANCET, 1932, ii., 620.
2. Lewis, T.: The Blood Vessels of the Human Skin, p. 47 et. seq., London, 1927.
3. Deutsch: Deut. med. Woch., 1931, lvii., 1225.
4. Jacchia, P.: Minerva Med., 1932, xxiii., 865.
5. Rosenbleuth-Ronald, E.: Med. Klin., 1932, xxviii., 1561.
6. Bettmann, E.: Deut. med. Woch., 1932, lviii., 1006.
7. Vas, S.: Ibid., p. 1009.
8. Burkardt, A. T.: Therapie der Gegenwart., 1932, lxxiii., 198.
9. Stark, G.: Beiträge zur ärtzl. Fortbildung., 1933, xi., 108.
10. Schenck, V.: Munch. med. Woch., 1933, lxxx., 223.
11. Behrend, H.: Deut. med. Woch., 1933, lix., 326.
12. Streicher, M. H.: Jour. Amer. Med. Assoc., 1932, xcix., 1745.
13. Pickering, G. W., and Hess, W.: Brit. Med. Jour., 1932, ii., 1097.
14. Weiss, G.,: Arch. Internal Med., 1932, xlix., 360.
15. Loc. cit.
16. Wright, S.: Applied Physiology, 2nd ed., p. 291.

THE PHARMACOPŒIA OF A CHILDREN'S HOSPITAL

THE new pharmacopœia of the Great Ormond-street Hospital [1] is probably unique of its kind. Forty-four pages are devoted to prescriptions suitable for use in the treatment of disease in childhood, and 36 to such various considerations as serum therapy, the prevention of scarlet fever, measles, and diphtheria, the dosage of 606 and its modifications, the treatment of diabetic coma and hypoglycæmia, and the requirements for blood groupings, blood transfusion, pyelography, and a variety of other procedures. There is even a note on how to hold a baby for eye treatment, and another on " how to bring up children " ! The tables of infectious diseases and the vitamin content of different foods are particularly well presented. As in previous editions, the content of several leaflets designed for out-patient use has been included, and these do not all seem to have had the careful revision that is characteristic of the other sections. Thus in one, the nursing mother is told to feed her baby three-hourly until he is 4 months old, and then three and a half-hourly for one month, whereas in the table of artificial feeds change is made from six to five feeds in the 24 hours at the age of 5 weeks (which presumably means four-hourly feeding with omission of the 2 A.M. feed in the latter case, though this is not made clear). Similarly, the statement that skimmed milks are useless as foods has the merit of simplicity rather than of truth, and might be difficult to explain away if the necessity arose to use them. Apart from these

[1] Pharmacopœia of the Hospital for Sick Children, Great Ormond-street, London, W.C. Published by authority of the Medical Committee. Edited by J. Wicliffe Peck, Ph.C., F.C.S., Pharmaceutist to the Hospital. Printed for private use. Copies may be had on application to the Secretary. Pp. 96. 3*s.* 6*d.* (Love and Malcomson, Ltd., London.)

comparatively minor points, an exceptionally high standard has been maintained; the editor, Mr. J. W. Peck, is to be congratulated on the inclusion of an amount of up-to-date material that is not elsewhere readily available, and makes this little book of real value both for hospital use and for the practitioner. The present edition contains 33 additions to, and 16 omissions from, the formulary; to one of these (the Linimentum Calaminæ of the new B.P.C.) reference has already been made by Mr. Peck in THE LANCET (1932, ii., 1026). The pharmacopœia is attractively produced, and its bulk has not been appreciably increased by the additions.

AN ART DISCOVERY AT GUY'S HOSPITAL

THROUGH the discriminating interest of the Superintendent, Guy's Hospital has discovered that it possesses possibly a unique painting by an English eighteenth-century artist. The picture may be the only surviving specimen of the work of John Teal Cooper, an artist famous in his day as a painter of fruit and flowers. The painting, covered with a dark and discoloured varnish, hangs in the hospital. The canvas is approximately 3 ft. by 2 ft. 6 in., and the subject is fruit in variety—grapes hanging in large bunches from branches of vine, a cut melon, peaches, plums, pears, raspberries—with a crawling snail in the lower left-hand corner. The signature "Teal Cooper" is quite clear in the lower right-hand corner. One recognises the familiar make-up of the "fruit pieces" which were very popular 200 years ago. Until the picture is cleaned its merits as a work of art are hard to determine; but Teal Cooper was highly esteemed in his day, and the work, if unique, must be valuable.

Upon the death of Cooper, the *Daily Advertiser* of Oct. 29th, 1743, wrote: "A few days ago died (after a Lingering Illness) in the 45th Year of his Age, that celebrated Master in Painting, Mr. John Teal Cooper, well known to the ingenious World for his most excellent Performances in Fruit. He was a Man of good Learning and Parts, of polite Address of Conversation, and by the Connoisseurs esteem'd the Michael Angelo de Campidolo of the Age; His choicest Pieces are in England, but (by Reason of his long Illness) they are few, and those in the Hands of the Curious, who esteem them as rare and almost invaluable. There is one of his Master Pieces in the Great Room at Guy's Hospital, which remains as a Monument of that Great Man's Ability in Painting. His Death is universally lamented."

It was this notice, copied from the *Daily Advertiser* and sent to him a few days ago, which drew Dr. Eason's attention to the painting, the history of which was unknown. The questions of the painting and the artist were referred to Prof. W. G. Constable of the Courtauld Institute of Art, who replied that very little was known of Teal Cooper, the notice in the *Daily Advertiser* being the basis of practically every mention of him. "For example," writes Prof. Constable, "Horace Walpole records his name in the 'Anecdotes' and evidently had a hazy recollection of the *Advertiser* notice. The only additional information I can give you about him is that Teal Cooper was born at Burford, Oxfordshire, on April 11th, 1682, and that he worked mainly in King's Lynn, where he died in 1743. There is a mezzotint portrait of him in the British Museum, dated April 11th, 1733, which carries his arms. The reference in the *Daily Advertiser* to his being the 'Michael Angelo de Campidolo of the age' should almost certainly read 'Michaelangelo da Caravaggio.' I have not been able to discover any other examples of his work, and for the time being, at least, the painting at Guy's is unique." Prof. Constable points out that a photograph might lead to the identification of further work by Teal Cooper, and Dr. Eason is arranging to have the picture cleaned and photographed, when the hospital authorities will be able to provide reproductions. The picture is at present so thickly coated with old varnish that it is not possible to make a good photograph of it.

The picture is an interesting addition to the art treasures of the hospital, which already include a portrait of Guy, the founder, painted by Vanderbank in 1706; of a Mr. Crank, traditionally from the brush of Zoffany; and of Dr. William Saunders, by Lemuel Abbott.

ENTRY TO THE NURSING PROFESSION

THE National Council of Women of Great Britain, at a meeting and conference held at Torquay from Oct. 10th to 12th, passed the following resolution:—

Training of Nurses.—That this Council is of opinion that in order to increase the number of suitable candidates for the nursing profession it should be made possible for pupils to take part of the preliminary examination before leaving a secondary school, thus stimulating their interest and relieving the pressure of the first year in hospital.

This resolution follows the lines of Recommendations XL, XLI, and XLII of THE LANCET Commission on Nursing, though the Commissioners did not envisage the restriction of institutions in which candidates could be prepared for the first part of the examination to secondary schools. The examination referred to is the Preliminary State Examination conducted by the General Nursing Council. The opportunity may be taken to make it clear that adoption of the principle of division of this examination (which is already divided into two parts for purposes of re-entry) would in no way imperil the one-portal system of entry to the nursing profession, since both parts of the examination would still be conducted by the General Nursing Council.

THE STANDARD SURGICAL MANUFACTURING CO., LTD. (49, Eastcheap, London, E.C.3), asks us to print the following statement: "The attention of the Company has been drawn to the fact that rumours are being circulated that the Company has an interest, financial or otherwise, in a retail house which sell surgical goods. The Company wishes to state that there is no truth whatsoever in these rumours, and that the policy of the Company is, and always has been, to supply to the trade only and not to make any direct sales to consumers."

Appointments

BRYCE, GRAHAM A., F.R.C.S. Eng., has been appointed Hon. Consulting Thoracic Surgeon, Manchester Consumption Hospital.

Births, Marriages, and Deaths

BIRTHS

ECCLES.—On Oct. 16th, at St. John's Wood Park, N.W., the wife of Dr. C. Yarrow Eccles, of a daughter.

RUSSIAN.—On Oct. 16th, at Alrewas, Burton-on-Trent, to Mollie, wife of A. de la C. Russian, M.R.C.S., L.R.C.P.—a son.

MARRIAGES

CUNNINGHAM—MCBRIDE.—On Oct. 21st, at St. Botolph's Church, Worthing, Alan Maitland Cunningham, M.B., B.Ch., to Norah Rowan, younger daughter of Dr. and Mrs. J. Best McBride, of Ashridge, Worthing.

DEATHS

BURY.—On Oct. 1st, at Dar-es-Salaam, Raymond Bury, Deputy Director of Medical Services, Tanganyika Territory, aged 51 years.

HOUGH.—On Oct. 15th, in a Manchester nursing-home, Charles Henry Hough, F.R.C.S., of Ambleside, in his 79th year.

KYLE.—On Oct. 17th, at Hornsey-lane, Highgate, Robert Kyle, M.B., Ch.B., in his 47th year.

MACLEOD.—On Oct. 19th, Herbert Adolphus Macleod, M.B., C.M., of India and "Bhamo," Worthing.

MUIR.—On Oct. 18th, suddenly, of heart failure, Mr. David Miller Muir, M.A. Camb., D.M.R.E., M.R.C.S., medical officer in charge of X ray, radium and electrical department, Royal Devon and Exeter Hospital, and a trustee of the Devon and Exeter Cancer Fund.

MURRELL.—On Oct. 18th, 1933, at 21, North Gate, Regent's Park, Christine Mary Murrell, M.D., B.S. Lond., on her 59th birthday.

WATT.—On Oct. 22nd, at The Hermitage, Harrogate, Thomas Watt, M.A., M.D., formerly of Darlington, in his 94th year.

WHITAKER.—On Oct. 14th, at Trinity-road, S.W., George Herbert Whitaker, M.R.C.S., L.S.A., in his 72nd year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.